THE GARDEN JOURNAL

OF THE NEW YORK BOTANICAL GARDEN

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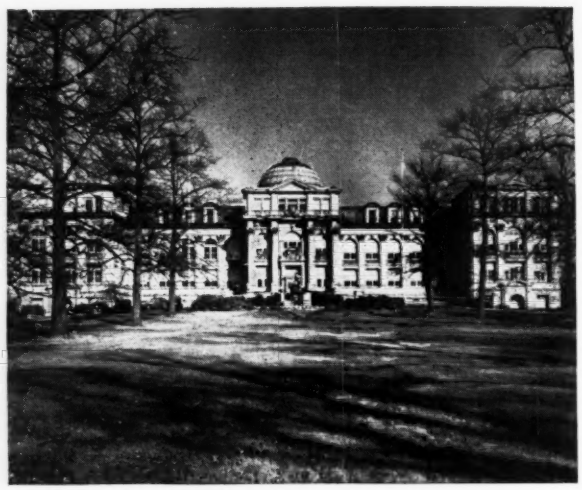

May 12 — A Mother's Day Flower Show — children's competition sponsored by The New York Botanical Garden in cooperation with the Ninth District of the Federated Garden Clubs of New York State, Inc.

May 17 — Annual Meeting of The New York Botanical Garden.

June 7 — Fourteenth Annual Rose Day at The New York Botanical Garden.

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of The New York Botanical Garden

DOROTHY EBEL HANSELL
Editor

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AMONG OUR CONTRIBUTORS

FLORENCE LEVY purchased her first primrose seeds from Sutton & Sons of England; twenty years later plants from her own hybridizing won the only blue ribbons in 1954 and 1955 awarded by the National Auricula & Primula Society at shows in Royal Horticultural Hall, London. "Barnhaven" in Gresham, Oregon, famous abroad as well as in this country, is an outgrowth of her interest in primroses. Mrs. Levy is one of the founders of the American Primrose Society and was the first editor of its official publication, serving ten years as such. The Oregon Federation of Garden Clubs honored her with its horticultural award in June 1955 for "her national and international contribution to the advancement of horticulture... for her outstanding work in improving strains and hybridizing primroses and her inspiring influence upon other hybridizers...for her lectures, writing, editing, judging..." ... T. H. EVERETT is Curator of Education and Horticulturist of The New York Botanical Garden, lecturer and author of numerous articles and books on gardening including *The American Gardener's Book of Bulbs, Lawns, How to Grow Beautiful House Plants, Flower Garden Guide, Gardening Handbook*... EDWIN BECKETT has been gardening around his new home grounds in Stockbridge, Massachusetts, since his retirement in December 1954 as Director of the Berkshire Garden Center. Mr. Beckett has had long and varied experience in the art of gardening, having been in charge of some notable estates in England and America . . . A. C. PFANDER is Administrator of The New York Botanical Garden . . . F. L. SKINNER'S work as a plant breeder is as well known in the United States as in Canada, to which country his parents brought him at the turn of the twentieth century. He is proprietor of "Dropmore Nursery" in Dropmore, Manitoba . . . JAMES M. GIBB is Superintendent of "Chelmsford," the beautiful estate of Mrs. Elon Huntington Hooker, in Greenwich, Conn. . . . G. CARL BALL gained practical experience in horticulture through working with his father, supplemented his practical experience with university training in the plant sciences, and is now a member of the well-known seed house, George J. Ball, Inc., which his father founded . . . DR. H. W. RICKETT is Bibliographer of The New York Botanical Garden . . . EDWARD J. O'KEEFE has twice won the Beatrix Farrand Silver Cup—for the beautiful exhibits of single roses he staged at the Twelfth and at the Thirteenth Annual Rose Day, June 1954 and June 1955. The roses were grown at "Red Oaks," the estate of his employer, Mrs. M. Newborg at White Plains, N. Y. . . . EDWIN DE T. BECHTEL grows over one hundred and fifty varieties of roses in his extensive rose garden at Bedford Four Corners, Mt. Kisco, N. Y., visits rose gardens abroad and in this country, lectures on roses, contributes articles on roses to many publications . . . A West Virginian by birth, JAMES F. FERRY received his M. S. from West Virginia University, his Ph.D. from Ohio State. Dr. Ferry has been engaged since 1935 in teaching and research and for the past seven years has been a member of the faculty of Alabama Polytechnic Institute as professor of botany . . . GERTRUDE B. FOSTER is editor of "Herb Grower Magazine."

CREDIT FOR ILLUSTRATIONS

We are indebted to the Special Display Committee—Mrs. Charles Burlingham, Mrs. Richard Meredith, Mrs. Donald B. Straus—for the selection of the front cover illustration of The Garden Journal. Photograph of original plate (source unknown) by E. N. Mitchell. Pp. 65, 66, Florence Levy; p. 68, upper, p. 69, upper, Berkshire Garden Center; p. 68, lower, p. 69, lower, Roche, Caldwell, N. J.; pp. 71, 72, 73, F. L. Skinner; p. 76, George J. Ball, Inc.; pp. 78, 79, Gottscho-Schleisner, courtesy of Mrs. M. Newborg; p. 80, upper left, Armstrong Nurseries, upper right, Jackson & Perkins; p. 81, Armstrong Nurseries; p. 84, The New York Botanical Garden; p. 87, E. N. Mitchell; p. 94, Erik Hans Krause; p. 95, E. N. Mitchell.

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Understanding the Early Primroses

By Florence Levy

Acaulis primroses bring a breath of spring indoors.

FLOWERS, like people, have definite personalities and, like people, touch our lives in various ways. We choose our flowers in much the same way as we choose our friends, and for quite the same reasons. There is a special something a flower must have for the gardener, one that satisfies a need within himself and, of course, the needs of his garden, and in return he must satisfy the needs of his choice. The something special primroses have is their appealing sweetness of form, their never-ending colors, their innocent, fresh look as though they had just dipped themselves in dew, and their bravery in blooming when the days are bleak, cold and otherwise unpromising. Then, when winter turns to spring, and for months to come, the shadier parts of the garden become the enchanted spots.

In a vast family consisting of over six hundred species, plants native to almost every country in the Northern Hemisphere, it is the hybrids that are grown extensively and the early spring-blooming hybrids that are the best known and loved. Of these, the Polyanthus is undisputed queen. Old-fashioned charm is not sacrificed to glamour, rather the two blend to make it the most popular spring perennial, one that causes more running to and from to see what is happening than any other plant. The individual blooms comprising the great clusters on nine to twelve-inch stalks exceed dollar size. The more we have of it, the greater the splash of color, clear, sparkling, exciting, in a full range of true blues from azure to cobalt; a full range of pinks from apple-blossom, wild rose, to deep maraschino; a battery of salmon shades, apricots, corals, and Orient reds; cocoa to coffee-browns; yellow-reds from Chinese to scarlet; blue-reds from carmine through American Beauty to crimson and maroon; lavender through violet, plum, and purple; white, gold and orange, of course; brilliant coppers and tangerine.

This may seem an elaboration on color, but in reality it is a very limited list. In a current rose breeding article the statement is made that "no hybridizer has ever succeeded in getting all of the primary colors in one flower." In Polyanthus, alone, all primaries are sharply delineated, all secondaries present (including greens in mutations), the tertiaries including clear, rich browns, and shades, dilutions and tints beyond the tertiaries. There is no shade we can think of that cannot be made, and still further, no shade that cannot be fixed over a period of years to come true from seed. In addition to this greatest of all floral color ranges is the remarkable variety of textures of a substance sufficiently heavy to withstand beating spring storms.

With all the calls for large flowers in general, and primroses in particular, it is interesting to watch the tiny Julianas, which often throw caution to the winds in winter and smother themselves in a blanket of dime-size blooms, entrench themselves more firmly in our hearts each year. Spreading by semi-stoloniferous roots, they make puddles of pixie flowers as unrestrained and eager as creeping children.

Midway between the Polyanthus and the Julianas are the Miniature Polyanthus. Here is a primrose with a combination of quite irresistible qualities. For the most part they are of rich and glowing colors, velvet-textured, heart-shaped petals forming quarter-size blooms clustered on six to eight-inch stalks that strike a regal pose.

But the "primrosiest" primrose, the one that brings back our earliest wild flower expeditions to fields and woods, is the Acaulis—the glorified wild primrose of England and Europe. Hybridized with the wild primrose of the Mediterranean, Levant, and Persia, its original yellow has been augmented to include the most heavenly blues in all shades, reds, pinks, rose, apricots, and white. This has been hybridized to the same large size as the Polyanthus and, like the Polyanthus, has lost none of its original child-like appeal. Each flower is borne on its own stem which has been much lengthened, five and six inches being average, and each plant bears scores of flowers over a long period of time. Of this primrose the English poet, Clare, said "Ere Christmas goes, the spring is met," and there is seldom a fall or winter month, snow permitting, that a long, rose-like bud cannot be picked and put on the win-

dow-sill to unfold its wonderful promise of spring. No flower brings spring to the wearer or to the indoors as does a bunch of primroses picked on a cold and dreary day.

All of the foregoing hybrid primroses have as their ancestors, in varying amounts and combinations, the species belonging to this same spring flowering, or Vernales, group: cowslips, oxlips, primroses *(P. vulgaris)* native to England, Europe and the Near East, and *P. Juliae,* indigenous to the Caucasus. And all, because of their close relationship, enjoy the same things. More shade than sun, to the north or east of buildings, under fruit trees, under other deciduous trees, at the feet of shrubs, along walks, in those sections of borders receiving less sun than shade.

Like all flowering plants, primroses need a certain amount of sun to bloom, but it is best to give them the sunny hours at the cooler beginning and end of the day, or dappled light of leafy shrubs or trees throughout the day. Practically all of the progenitors of these hybrids seek the coolest situations in their native lands—the primrose in woods, copses, hedgerows, grassy lanes, northern slopes and embankments, along ditches and streams; *P. Juliae* near streams, even under waterfalls, in the Caucasus. Only the cowslip (and the rare oxlip) choose the more open fields and pastures as is clearly indicated by their smaller, more compact, rugose foliage in comparison to that of the true primrose. However, rules are often influenced by existing elements. For instance, the gardener growing primroses in climates of high summer heat and drought would place them in more shade than the gardener living in an area of cooler, more moist summers. Or the gardener who has made his soil cool and water-retentive, although well drained, by incorporating humus, and who further uses a humic top mulch around his plants, can grow in more sun than can the one with thin, sandy or rocky soil. The one who can water unstintingly can usually grow in more sun, but not unless he has made his soil of good tilth. However, one of the great values of primroses is that they do like more shade than sun and, therefore, bring to life those spots which, in the early spring, would otherwise be barren.

There is one more principle to understand and that is hardiness which is a relative term, for primroses which are winter hardy in below-zero Quebec may not survive a mild winter followed by a sudden above-zero fall of temperature with no snow coverage. First of all, the gardener must make sure he is growing a hardy strain of primroses. Those developed in freezing winter climates with sudden, sharp freezes during spring bloom have the advantage of natural selection. It is the survival of the strong and the defeat of the weak which is not possible in less rigorous climates. Secondly, these hardy strains must have been in the garden long enough to establish thoroughly, over a period of months, a well-developed root system, which is the one argument against summer seeding and late fall planting except in mild climates. Thirdly, the use of fertilizers high in nitrogen must be avoided in the fall. Any stimulation of leaf and expansion of cells at this time is dangerous, for the more expanded the cell, the more quick collapse can be when sudden freeze hits. Fertilizers with an appreciable nitrogenous content should be applied only during the late spring and summer growing season, when it is the purpose of the leaves to assimilate and digest the food for eventual storage in the roots, and this is done after danger of freeze has passed. Those who fertilize in early spring when bloom begins, in order to force even larger flowers, may find themselves in trouble should a late spring freeze occur as it did several years ago in Oregon on April 30. There is a fertilizer, and an organic one (always preferred to chemicals) that can be used in the fall, and in the early spring, as an artificial hardening-off. The analysis is 0-10-10. It saved more than one flower crop during the April 30 freeze, when the outer covering of stalks broke from umbles like girdled tree trunks.

And finally, an understanding of the plant's nature helps in periods of emergency, when all evergreen perennials are exposed to extremes. The spring-blooming, Vernales, group of primroses makes its flower crop in summer and fall and is ready to plunge into bloom at the first signs of warmth and increasing light of the lengthening days. Keeping these primroses covered in snowless freezes, or in alternating freeze and thaw periods, until temperatures stabilize in the '30's accomplishes two things: retards evaporation which saves the growing plant from possible injury when subject to sudden freeze, and keeps them dark and, therefore, semi-dormant and less active. If there has been a natural hardening-off process through gradual temperature declines to the upper 20's, the plants can usually make a return to semi-dormancy without protection—provided the freeze is not too severe nor of too long duration. The transpiration of moisture is then

Left to right: stalked Juliana, miniature Polyanthus, and Polyanthus primroses.

reduced to correspond to the plant's reduced absorption, and this, in turn, raises the sugar content, enabling the plants to resist the loss of water. With adequate snow coverage, gardeners can rest secure in the knowledge that their plants have the best possible protection. But the winter that is easy on the snow shovel is the hardest on evergreen plants, and materials such as fir boughs or wood excelsior collected from hardware stores during the year, or any non-packing material put on when the first snowless freeze strikes and, just as important, left on until temperature ranges in the 30's, will see a hardy plant safely through.

An interesting observation made among gardeners of the Northwest, Middle West, and Northeast is that hardy evergreen perennial plants liking cool conditions respond to a few simple precautions during the extremes of summer heat and winter cold. The humic soil that keeps roots cool in summer, grasps roots more firmly during periods of freeze and thaw; the top mulch of humus around the plants that additionally keeps roots cool in the summer and conserves moisture, keeps roots warm and diminishes transpiration during freeze. The over-all protection in the absence of snow, such as wood excelsior, hay, or boughs, can be placed lightly over the plants during heat and drought, watering directly through and in this way increasing the coolness and moisture conservation.

Space does not permit elaboration on the two other main groups of the primrose family—the European primulas, of which the Auriculas (also hybrids) are most important, and the Asiatic primulas, both hybrids and species, of which so many are native to the Himalayas. Using the spring-flowering group as the standard gauge for site, the Auriculas like less shade, with rocks for mulch, and the Asiatics like more shade than the Vernales, with a thick or spongy loam and more water. The Auriculas follow the Vernales, blooming in late spring, and the Asiatics, for the most part, start with the Auriculas and continue into early summer. Some, however, bloom with the Polyanthus. But whatever primrose charms us in that special way, we can be sure that something beautiful is going to happen to our shadier garden spots during the most forlorn months of the year.

ANNUALS

In response to numerous requests received from visitors to the Garden's exhibit at the International Flower Show, we are reprinting the information on the signs accompanying the exhibit. The information was prepared by our Curator of Education and Horticulturist, T. H. Everett. — The Editor.

About Annuals: The plants gardeners call annuals bloom the first year from seed and then die naturally or are killed by frost. They include true annuals such as China asters, calendulas, and larkspurs which normally die after they have bloomed once, and certain tender perennials such as verbenas, petunias, and snapdragons which in mild climates live and bloom for many years.

Annuals give a quick return for a minimum investment. Most provide color over a long period and are especially useful in new gardens because after they are cleared away in fall the ground can be spaded deeply, and compost, manure or other organic matter added. This treatment repeated several times greatly improves the soil and may be used to make it ready for perennials, roses, shrubs and other permanent plants.

There is a great variety of annuals. Some, such as sweet alyssum, sanvitalia, and portulaca are low edging plants. Others, including sunflowers, cosmos, and tithonia may grow six- to twelve-feet tall. Sweet peas, cardinal climber, morning-glories, climbing nasturtiums and certain others are vines. Many are useful as cut flowers. Here belong China asters, stocks, snapdragons, coreopsis, scabious, marigolds, calendulas, sweet sultan, larkspurs, zinnias, and babysbreath. For long-season bloom in summer beds and in window and porch boxes, wax begonias, ageratum, globe amaranth, hunnemannia, petunias, salvias, snow-on-the-mountain, torenia, verbenas, vincas, and zinnias are unsurpassed.

Sowing Annuals: Annuals thrive in any moderately fertile, well-drained garden soil. Most need full sun. A few, including wax begonias, torenias, lobelias, nicotianas, impatiens, and balsams stand part shade. Best results are had with certain kinds if seeds are sown directly out-of-doors where the plants are to bloom. In this group belong larkspurs, poppies, California poppies, lupines, and love-in-a-mist.

Annuals that need a long growing season, such as wax begonias, lobelias, petunias, salvias, verbenas and snapdragons are best raised from seeds sown in a greenhouse in February. Many other kinds such as asters, stocks, balsams, coreopsis, gaillardias, chrysanthemums, cosmos, cornflowers, snow-on-the-mountain, cleome, statice, sweet alyssum, tithonia and zinnias may be sown indoors during the last two weeks in March or outdoors in late April. Sowings made indoors give earlier bloom than later sowings outdoors. Where greenhouse facilities are not available, an early start may be had by sowing in pots or flats in a sunny window or in a coldframe.

To provide late bloom in the garden successive sowings of some annuals —marigolds, zinnias, ageratum, celosia, and sweet alyssum, for example— may be made up to late June. Plants raised from late sowings are useful for filling gaps and providing color in perennial borders.

Care of Annuals: Annuals sown indoors should be transplanted to flats (shallow boxes) containing fertile soil when their second pair of leaves have developed. They may be spaced about two inches apart. Some, such as snapdragons, petunias, verbenas, and salvias should be pinched (have the tips of their main shoots removed) to induce bushiness. Before indoor-grown annuals are transplanted to the open ground, they should be hardened by gradually exposing them to outdoor conditions.

A coldframe makes it possible to start many annuals three to four weeks earlier than it is practicable to sow outdoors. The seeds may be sown directly in the frame or in pots or flats. The young seedlings are transplanted when their second pair of leaves have developed, spacing them about three inches apart. Careful watering and ventilating to ensure conditions in the frame that simulate a warm spring day outdoors encourage good growth. Before transplanting to the open garden, the plants are gradually hardened by ventilating the frame more freely.

Summer care of annuals consists of eliminating weeds, staking, watering and removing faded flowers. Excessive fertilization should be avoided; if the soil is rich at planting time no further applications are likely to be needed. On poor soils, a mid-season application of any complete garden fertilizer will prove beneficial. Spraying or dusting to control pests and diseases is sometimes necessary.

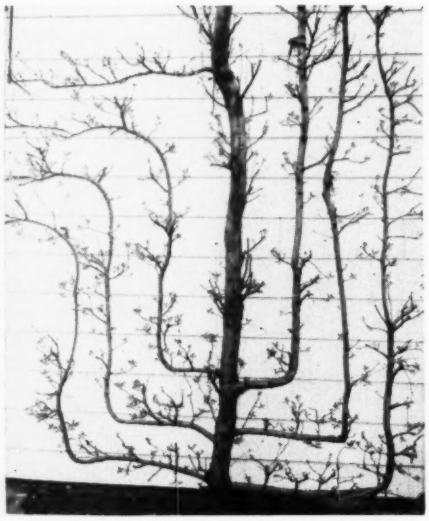
ESPALIER TRAINED FRUIT TREES

By Edwin Beckett

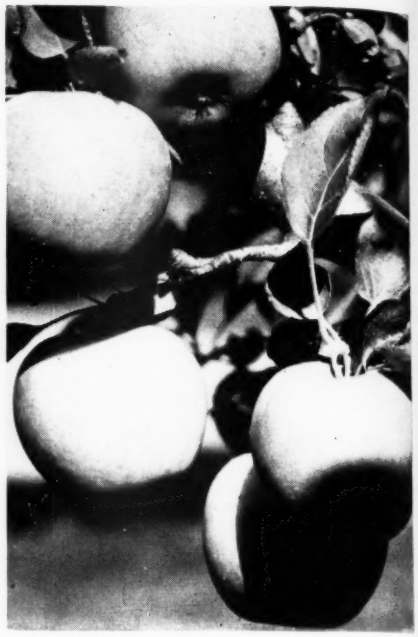
THE TRAINED FRUIT TREES, usually referred to as "espaliers," have been produced and grown in Europe for many, many years. Their origin obviously was to serve a definite purpose, that of growing fruits on fences and walls, on a tree that could be severely restricted in its growth in order to make the most of the space utilized. It was supposed that better quality fruit was obtained by this method. In any case the system, while time-consuming in the training and supporting of the trees, did make pruning, thinning, and general care a much simpler matter and at the same time provided the maximum of the much needed sunshine and air to the greatest possible amount of leaf surface. It also simplified the question of providing protection from frost during the blossoming period. It can be termed an intensive system of fruit growing. To produce trees amenable to this treatment, that could be restricted in their growth and at the same time produce good crops of fruit, dwarfing understocks were used. Not only did these stocks control the growth and size of the trees, they hastened their coming into bearing. Apples on seedling apple or crab stocks usually require ten or more years, according to variety, to reach bearing age, whereas on dwarfing stocks they commence to produce fruit within two or three years from budding.

Commercial fruit growing in Europe in the past was not an established business as is now the case. Each person who wished to have fresh fruits of apples, pears, plums, grew his own supply; naturally the largest producers were the owners of estates where professional gardeners were employed to tend the trees. Practically all gardens of any size, from a small half acre to those covering several acres, were enclosed by walls to exclude whatever roaming animals, domesticated or wild, the vicinity supported; and the large gardens were divided into sections by cross walls. The average height of these enclosing walls would be some ten to twelve feet, though many were much higher. Not infrequently these were erected with the object of fruit growing in view; built into them was a system of flues. During cold spells, at the flowering period, wood fires could be started at openings provided in the base of the wall, and the warmed air circulating through the flues was sufficiently high in temperature to prevent frost damage. It was on these walls that the art of trained fruit tree growing was practised to perfection and good fruit produced, the height and scope available being more adaptable than fences for large specimens.

Trees of many shapes and styles were popular; among the most common were the different cordons, erect, oblique, and horizontal—in the last the branches proceed in opposite directions from the central stem. U-shape trees, referred to as palmettes, were much in demand, the single U for narrow spaces, the double and triple for wider areas producing a candelabra effect. The fan-trained and the many-tiered horizontal espalier were, perhaps, the most suited for large expanses of wall. Bush-trained trees, while not literally admissible under the term "espalier," were grown in large numbers, particularly apples and pears. Apples took the form of an open-topped vase, the branches radiating from the central stem, then being brought to a vertical position when the desired length was reached. Once the width of the tree was determined and the branches started vertically, there was no further development to speak of in the width of the tree. The height usually was six feet or so. Pears, as a rule, were trained pyramid fashion and allowed one or two feet more in stature. Spur pruning was practised as on the fence or wall-trained trees.



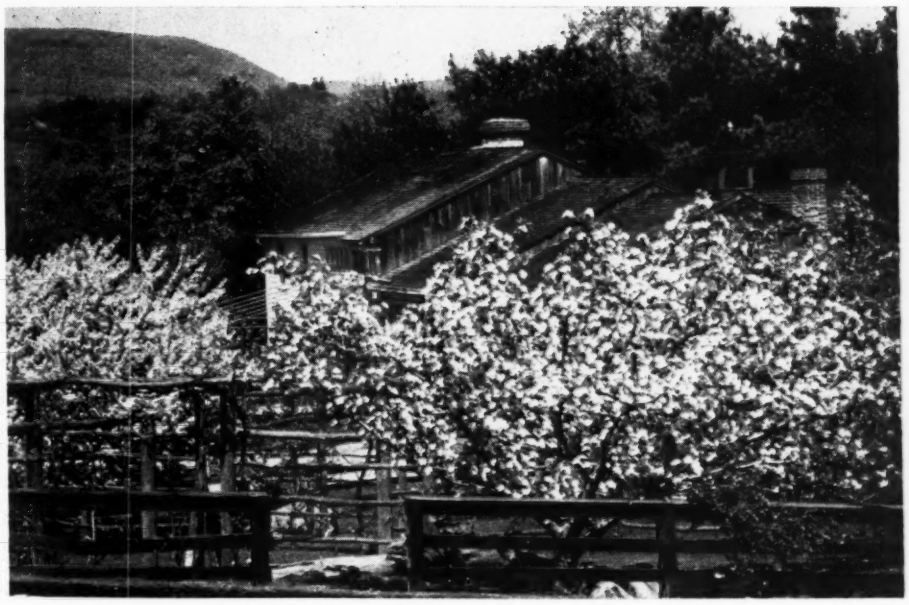
An espaliered apple tree against the side of a home.



'Ribston Pippin' from bush-trained tree on No. 9 stock.

The growing of espaliers in this country, at least through this eastern section, has not been practised to any great extent. Espaliers have been employed mainly as an ornamental feature or in a limited way as a hobby, although there are a few nurserymen who specialize in their production. There are, I think, various reasons for this, the principal one being a lack of suitable structures on which to grow them, unless specifically provided for the purpose. Then, too, attachment to a masonry wall in localities where the summers are hot and comparatively dry is not ideal for fruit tree culture. The strict adherence to the system of pruning and training, to keep trees in good condition, is also a factor tending to their unpopularity.

Almost all of the dwarf fruit trees are grown on the spur-pruned system, the general exception being Morello cherries and peaches. These are produced by budding or grafting on the various dwarfing stocks and training to the desired shape, commenced and



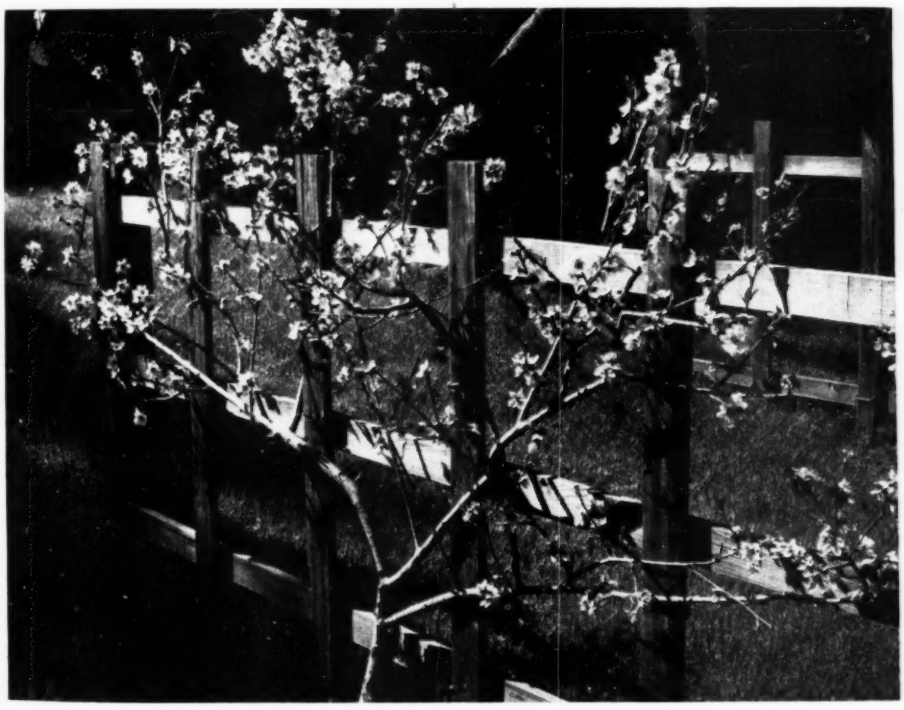
Part of the orchard of apples, the majority of which are on semi-dwarfing stock, at the Berkshire Garden Center. For the past six years, the trees have been summer pruned and restricted as to height; otherwise they would have been much taller.

continued as they develop. Each branch or arm of the tree, from its commencement, is allowed to extend only in the direction chosen, laterals being shortened or removed; the object is to produce fruiting spurs along its entire length. Summer pruning is resorted to —there are several schools of thought on the subject. Roughly, it consists of the shortening of all lateral growth during the summer, whether proceeding from the extension shoots or laterals. Some growers pinch out the soft green tips of these shoots when about six inches in length, going over their trees several times during the summer. Winter pruning consists of the cutting back of all laterals to one-quarter or three-eighths of an inch spurs. The extension shoot is not summer pruned but is reduced at the time of winter pruning according to its strength, an average length retained being some eight or ten inches. Another quite satisfactory method is to make one summer pruning the end of July or early August, reducing the laterals to two good leaves, disregarding the small basal leaves. This method obviates winter pruning, except for the extension shoots which are treated as described above.

The understock, the all-important part of the dwarf tree, is usually a dwarfer or slower growing type of the same genus but not necessarily the same species. Apples are worked on what is known as the 'Paradise,' a form of *Pyrus malus* var. *pumila*. Pears are budded or grafted on Anger's quince. Plums are put on 'St. Julien,' a small-leaved, slow-growing type of the European plum. This same variety of plum and one known as 'Damas Noir,' is used for peaches and nectarines, too. These understocks not only have a restraining influence on the growth, but they also induce early fruitfulness in the tree and, in the case of peaches and nectarines, prolong the bearing life considerably. I have seen many greenhouse-grown trees on 'St. Julien' in excellent condition and bearing full crops of fruit when twenty or more years old. Cherries are usually worked on 'Mahaleb' stocks. Not all varieties of apples do equally well on one particular stock, and most nurserymen have their own particular selection of stocks on which to bud their trees. Some varieties of pears are incompatible with quince which calls for double budding or grafting, first grafting a compatible kind of pear on the quince, grafting or budding the desired variety on the intermediary.

Some years ago the East Malling Research Station in England brought together samples of the many 'Paradise' stocks for apples and conducted extensive tests to determine the degree of dwarfing induced by the various types under observation. No. 9 in their tests was considered the most suitable for espalier or bush type trees. It was not the most "dwarfinest" as others carry that propensity further than No. 9 as to be impractical. Several others, indicated by various numbers, while inducing early fruiting are classed as semi-dwarfing; others are better adapted for orchard trees rather than for a small garden tree. Some work with fruit tree

(Continued on page 83)



An espaliered peach tree on a fence in a New Jersey garden.

FROM MUD TO MARIGOLDS

Know How To Do It

By **A. C. Pfander**

LANDSCAPING the residence proper is usually uppermost in the minds of new home owners. Mixed foliage across the front and on the sides produces the best effect in most situations. Some broad-leaved evergreens, yews, and azaleas furnish variety in color and texture of foliage, with the azaleas also offering lovely colors from their spring blooms. Well spaced to allow plenty of room to grow, these shrubs will make an interesting setting for the home, one that will retain an attractive appearance every season of the year.

Again, let me warn you not to rush. If the budget is a bit tight, concentrate on the most important plants first—the ones around the entrance, at the corners—and then space out some plants in the less important areas next under consideration. Put low-growing plants under windows; be careful not to buy any plant which will grow out of bounds in a few years.

In one of the most popular developments on Long Island, and less than ten years old, the entrances to the houses are so plant-crowded that the owners take a drenching every rainy day as they go out or in the front door. Some of these home owners evidently could not endure the inconvenience any longer—they cut the evergreens back so hard that the poor plants look crippled, and now they are forced to remove them. So you can see how necessary it is to select plants that will give lasting satisfaction.

Yews comprise one of the most popular groups of evergreens. Most of them are relatively hardy and lend themselves to excellent use in foundation planting and general landscape work. I shall mention only a few of the outstanding yews—there are many others—and you will find among them the plants you need for a particular purpose:

Taxus media Hicksii may be used to give a feeling of height to the house generally, or to emphasize the entrance or corners to avoid an appearance of squattiness. This plant, excellent in foliage and growing habit, can be sheared to a slim, elegant cone shape.

T. Kelseyi is of similar habit and excellent character. Both plants also make very good sheared hedges.

Taxus cuspidata nana var. *brevifolia* is unusually low-growing and has rich, dark green, dense foliage. It makes a very desirable plant under windows where permanent low growth is important or, indeed, for any other place where a low evergreen is wanted.

Taxus baccata repandens, another low-growing yew, spreads out more than the above, and therefore, needs more growing space.

You will very often find in a block of yews of any variety that there are differences in growth habit. Some of them are denser than others, some may show decided difference in annual growth. The best procedure is to select the plants right in the nursery row, for specific purposes. All of the yews can be cut back or sheared into shape, but it is much to be preferred to select by growth habit, so that repeated pruning may be avoided. The natural grace of plants is lost through inexperienced pruning.

Rhododendrons and azaleas like to be located where they are protected against the extreme heat of the sun at least part of the day—on the north or northeast side of the residence or in a partly shaded spot in the garden. A generous addition of peat to the soil is very desirable.

Rhododendron Catawbiense hybrids are hardy, reliable, and available in many colors.

Rhododendron caroliniana is a dainty member of this family with smaller leaves and pale rose to white flowers.

Rhododendron dahurica var. *mucronulatum* is a very early bloomer; the flowers are of a soft to medium purple shade and particularly effective if planted with the color yellow nearby.

Azalea Hinodegiri is a good evergreen shrub and very hardy. It is covered with deep red bloom in May and makes a splendid addition to the garden.

A lovely pale to deep salmon-colored azalea is *A. Kaempferi.* This is not an evergreen shrub but a very showy one when covered with its two to three and one-half inch blossoms. It will grow to a height of six to eight feet and should have a somewhat sheltered position away from strong winds.

Our own native mountain-laurel is one of the very best evergreens and deserves consideration in the home landscape plan. It is one of the less expensive evergreens and responds well to easy care, enjoying the same conditions as rhododendrons and azaleas. Mountain-laurel flowers more profusely in some sun; a northeast corner will give some morning sun, but a due north exposure is not recommended.

Andromeda japonica is another excellent plant which likes peaty soil. It has a very interesting growth habit with arched and molded branches and beautiful bloom in early spring. Its foliage, too, is attractive, changing in color tone with the season.

Berberis Juliana is an unusual evergreen plant with very interesting foliage. It suffers some winter damage, unless planted in a sheltered position.

A number of very fine hybrid hollies *(Ilex)* are to be found in some of the better nurseries. These hollies with beautiful glossy foliage and good fruiting habits are fine additions to the landscape design. However, it is important to determine the hardiness of these plants; it's a wise measure to plant them where they get protection against winter winds and from February and March sun. A protective burlap wrapper will bring them through the dangerous period in any exposed position.

Hollies need room to develop into good specimens and should be planted about five feet away from any wall, hedge, or building. Over a period of years they may reach a height of fifteen to eighteen feet, and this should be kept in mind at planting time. A holly will make a beautiful sentinel near the en-

(Continued on page 75)

BREEDING PLANTS

TO WITHSTAND PRAIRIE WINTERS

By F. L. Skinner

IT WAS IN Aberdeen, Scotland, where I spent the first thirteen years of my life, that I learned to know and love the old roses, the mock-oranges, the lilacs, the rhododendrons, and a host of other shrubs, trees, and flowers. In 1895, when my family arrived in Manitoba, there was very little ornamental gardening in the Canadian prairies; it was several years later, before the first lilac bush opened its flowers, even in the city of Winnipeg.

Many lovely flowers grew wild on the prairies in those days; still I missed the favorites of my childhood, and it was the desire to grow them that started me on my career of plant breeder.

As soon as I was in a position to do so, I imported a collection of about one hundred and forty roses, including all the old varieties available at that time. Unfortunately, none of them proved quite hardy though I was able, by giving them some protection, to keep the hardiest alive for a few years. I thought that grafting these on native rose stocks might give them a little extra hardiness, but in this I was disappointed. Then I decided to try to combine the hardiness of the wild roses with the beauty of the garden varieties by raising hybrids between them, using the wild roses as seed parent. I was successful in raising quite a few hybrids, but owing to the fact that one of the parents was a pure species, many of that parent's poor qualities were usually dominant. Only in rare cases did I secure the results I had hoped for. Believing that the crossing of two hardy species and using the hybrid as hardy parent might bring better results, I raised a number of hybrids between *Rosa rugosa* and our three native species. Some of my better roses now have both *R. rugosa* and one of our native species in their pedigree.

Some of my earlier rose hybrids, though they could not bear comparison with garden roses, had some value as hardy flowering shrubs. When I secured such fine leaved species as *Rosa koreana, Primula,* and *laxa* (of Retzius), I set to work to try to raise hybrids that would have nice flowers and at the same time clean, neat, and attractive foliage that would be useful in landscaping. I already had had some success in mating *Rosa blanda* with double-flowered forms of *Rosa spinosissima* and by using these same forms on the three species mentioned, I have now secured a number of varieties ranging from three to six feet in height. These have the desired attractive foliage as well as semi-double or double flowers of good form.

To go back to the early days of the century—the only horticultural literature available to me at that time was experimental farm reports. A study of these showed that many of the woody plants that had proved hardy on the Canadian prairies were natives of northern and northeastern Asia, so I collected all the literature I could buy relating to the climate and flora of that region. Atkinson's *Upper and Lower Amoor* and Younghusband's *Long White Mountain* were most helpful, presenting a great deal of information about the climate and flora of northern Korea, Manchuria, and eastern Siberia. Throughout this region, the prevailing winter winds are from the northwest giving it extremely cold winters, while the flora is more closely related to that of western Europe and eastern North America than is that of northcentral Asia. So when I visited the Arnold Arboretum in October 1918, I was delighted to receive from Professor Charles S. Sargent a few very small plants of *Syringa dilatata* and *S. velutina* grown from seed collected by Wilson on the Diamond mountains in 1917. I had previously received quite a collection of lilacs from England, but many of them suffered at times from the severity of our winters in the Canadian prairies.

Ligularia speciosa introduced by the author.

The winter of 1920-21 was very hard on lilacs at Dropmore; many of the vulgaris varieties killed back quite badly, while both *S. dilatata* and *S. velutina* came through without injury and flowered freely. Pollen of *S. dilatata* was used on the few varieties of *S. vulgaris* which flowered, and some interesting hybrids were raised. I did not expect that these would have more than local interest, but several were named. Some of them were sent to the Morton Arboretum and were so well received that I decided to do some more breeding work with this type of lilac.

Though the European varieties of lilac are very beautiful, they have several faults when grown in the Great Plains of America. Many sucker so badly that they do not flower well, unless given a great deal of attention. In some districts, they suffer severely from winter injury and late spring frosts. In Iowa, where the tall corn grows, my friend, Leslie Sjulin of Interstate Nurseries, tells me that lilacs grow so tall one needs a ladder to enjoy the beauty and fragrance of some varieties. *Syringa dilatata* does not seem to sucker and my first hybrids, now over thirty years old, still show no sign of suckering. It also seems to produce a

high percentage of dwarfs among its progeny, one such is only three feet high at twenty years of age and has flowered freely for the past sixteen years. Even the taller forms have a tendency to flower quite close to the ground. These dwarf forms should be especially suitable for planting near the modern ranch type of dwelling.

Incidentally, we propagate lilacs by grafting on villosa stock which seems to be congenial to most varieties. We have tried both grafting and budding on *S. japonica* and *Fraxinus viridis* with little success, and *S. vulgaris* varieties are difficult to root from green wood cuttings under our conditions. Dilatata hybrids are a little more promising; however, we have found a great deal of variation in the response of different varieties to this type of propagation.

I became acquainted with the late Dr. W. T. Macoun many years ago, and in one of our talks about prairie horticulture, he said there was great need for colorful vines that would take the place of rambler rose and large-flowered clematis grown in the East. Here, at Dropmore, we have worked to fill this need. In the genus *Lonicera,* we have a climbing native species, *L. dioica,* but the flowering period is short and it is not as colorful as *L. hirsuta* which I collected in northern Minnesota. I made several attempts to cross both these species with pollen of *L. sempervirens* and at last was successful in raising four seedlings of *L. hirsuta.* Three of them were apparently identical with *L. hirsuta,* but the fourth resembled *L. sempervirens* in both leaf and flower and, being sterile, it continues to flower from June until cut down by severe frost. We have found soft wood cuttings or layering to be the best methods of propagation.

To bring the large-flowered clematis into the ranks of climbing plants hardy in the Great Plains area presents quite a few problems. I have secured hybrids between *C. integrifolia* and some of the large-flowered forms that are intermediate in size and form between the parents and very floriferous, but their propagation in quantity is difficult so far. Some of them can be multiplied, in a limited way, from soft wood cuttings but others are most satisfactorily propagated by division of the roots. This, at best, is a slow process. An attempt to secure larger-flowered forms by crossing the Dropmore hybrids with *C. Durandii* failed to produce anything better than we had already.

Clematis macropetala and its near relative *C. sibirica* are quite promising as parents of a race of hardy woody climbers with large flowers and hybrids have been raised between them. The colors of the flowers (and some measure over five inches across) range from pale blue to pale rose-pink, with a tendency to throw an occasional reddish or white flower. These hybrids are quite fertile; about five hundred seedlings were raised last year. Both parents and the hybrids can be propagated by soft wood cuttings.

Spiraea Vanhouttei requires protection on our western prairies, if we want it to flower freely. Only once in over twenty years has it flowered freely at Dropmore without protection. The introduction of the Korean *S. trichocarpa* and *S. trilobata* gave me the opportunity to raise hybrids that have about the same ornamental value and are truly hardy. *S. media* and *S. betulifolia* have also been used at Dropmore in the production of new hardy shrubs.

Crataegus, Malus and *Prunus* are other genera of woody plants that have been worked on at Dropmore to produce new hardy ornamentals.

In perennials, I have done a great deal of breeding with lilies and chrysanthemums and in less degree with anemones, asters, dianthus, iris, peonies, primulas, and tulips.

My first work with lilies was done about thirty-five years ago with bulbs of *L. concolor,* imported from England a few years earlier. This form was self-sterile and not fully hardy, and the increase one year was very often killed the following winter. Then I secured a few seeds of *L. concolor pulchellum* which had been collected for H. Correvon in Manchuria. When the first seedling of *L. concolor pulchellum* flowered, the typical form was crossed with it, giving rise to the Dropmore concolor which won an A.M. from the Royal Horticultural Society when shown in 1926 by Amos Perry.

This single pink hybrid is the result of a cross between *Chrysanthemum Radwadskyi* and a garden variety.

The introduction of *Lilium Willmottiae* led to a considerable breeding program by Miss Preston of Ottawa and myself, and resulted in lilies with a wide range of color and form. These were secured by mating *L. Willmottiae* with members of the umbellatum group.

The introduction of *Lilium regale* gave a great impetus to lily cultivation, but it was not wholly suited to conditions here— and the severe winter of 1941-42 removed the last regal lily from my garden. *Lilium Henryi* and a form of *L. centifolium* grown from seed sent me by the late William Saunders of London, Ontario (son of Dr. Saunders who founded the Dominion Experimental Farm System) proved hardy; and by using pollen I had obtained at the shows of the American Lily Society, I have been able to build up a race of trumpet lilies that vary from pure white to pale pink and rich yellow. *Lilium Martagon* and its hybrids have also proved useful in breeding work. I now have hybrids that range from white almost to black and with a constitution that has enabled some of them to become naturalized in the aspen woods near my home.

The work of the United States Department of Agriculture at Beltsville, Maryland, in the use of hormones and disinfectants in the propagation of lilies from scales has removed many of the hazards and enabled the breeder to multiply the best results of his labors.

Twenty years ago chrysanthemums which would flower outdoors in western Canada were unknown. Some of the azaleanums and 'Clara Curtis' had been tried but with only a moderate degree of success. I had grown several species, including the rather weedy-looking *C. Zawadskii,* an Austrian species with the virtue of being hardy and flowering here in late August. Then, while on a visit to Hartford, Connecticut, I had the good fortune to meet the late Alex Cumming. I learned from

Lily 'Helen Carroll' produces unspotted yellow, five to six-inch blooms on six to nine-inch stems.

Rose 'Wasagaming' bears very fragrant, deep pink flowers for fully a month in early summer; parentage—*Rosa acicularis* x *rugosa* x H.T.

him how to get chrysanthemums to set seed. *C. Zawadskii* now proved invaluable, for it was able to transmit to its hybrids the necessary qualities of early flowering and hardiness. Until recently, all my chrysanthemum breeding was based on *C. Zawadskii* and its hybrids. *Chrysanthemum arcticum* as cultivated in this country has been too late in flowering to be of any use, and none of its hybrids that I have been able to obtain, ever flowered out-of-doors at Dropmore. In 1947 I visited the Aberdeen, Scotland, University Botanic Garden, and there I saw a variety of *C. arcticum* in bloom in July. I was able eventually to establish this form, and it is now being used in breeding work by Dr. Viehmeyer of North Platte and myself, and at both places interesting results are being secured.

The foregoing is a review of some of the plant breeding at Dropmore that is of fairly general interest. Quite a lot of breeding and plant introduction have been done that though of more local interest has provided me with some interesting problems. When I was in Sweden in 1947, I saw some of the tree breeding at the Ekibo Station and some specimens of *Populus tremula erecta.* Dr. Keillander who was in charge at the time of my visit, informed me that in Denmark hybrids of *P. tremula* had been rooted from soft wood cuttings and once on their own roots were easily grown. I have managed to introduce the erect form of *P. tremula,* and while it buds easily on *P. tremuloides,* budded trees on this stock would not be satisfactory for general distribution. I have not yet succeeded in getting it on its own roots.

In breeding work with willows and poplars, I find it necessary to bring in flowering wood of weeping willows and Lombardy poplars from a considerable distance. They do not flower well after having been en route for several days. A method of handling such material so that it could be brought into bloom when wanted would help me to secure the hybrids I want.

Tilia americana is very susceptible to leaf mite here, but *T. cordata* and *T. mongolica* are immune to this pest. I have raised a number of hybrids between *T. americana* and *T. cordata* that are immune to mite and much faster growing than either parent. Under our conditions, these hybrids do not bench graft very well, but they do take very well when budded on seedlings of *T. platyphyllos.* In this connection it is interesting to note that while *S. villosa* does well as a stock when bench grafted, it is almost useless if one buds the vulgaris hybrids on it.

Prinsepia sinensis is a shrub which very few nurseries seem able to propagate with any degree of success. At Dropmore we have no trouble with it. The seeds are cleaned and sown in beds as soon as possible after they are ripe; the following August or early September, most of the seeds have germinated and occasionally they will develop one or two true leaves. At this stage, they do not look as though they would stand our winters, but by covering them lightly with dead leaves just before severe winter sets in, a very high percentage will survive and start into growth as soon as the covering is removed in spring.

Based on the paper, "Developing New Plants for Modern Gardens" which Dr. Skinner presented at the fifth annual meeting of the Plant Propagating Society in Cleveland, 1955.

Know What to Do

May and June

In the New York area we usually start planting the hardier annuals early in May. Farther north the middle of May will be time enough. However, we must always remember that the ground temperature is a most important factor and that nothing is gained by planting in ground that is too cold. Antirrhinums, or snapdragons, larkspur, calendulas, and carnations are among the earliest annuals we can plant at this time. If snapdragons are to be grown for cut flowers, I recommend the greenhouse hybrid varieties as the best for this purpose. In general, annuals either home-grown or purchased have a much better effect when planted in groups of one color instead of mixed colors. Label each group for future reference and to provide information for others who may be interested in your garden.

Seeds of many annuals can be sown outdoors in May and plants from these sowings may be transplanted into spaces where tulips and hyacinths have finished blooming. May is also the time to look at your tulip display before the flowers drop and make note of any changes to be made in the color scheme for the following spring.

Dahlia tubers should be planted during the latter part of May. If manure or compost was turned in the previous fall, a light forking is all that is needed to level off the bed. Drive stakes on two-and-a-half-foot centers in lines three feet apart; then dig a hole about ten inches square, four inches deep in front of each stake. Place a measure cupful of pulverized sheep manure and a half cup of fine ground bonemeal in each hole and mix in well with a digging fork. Divide the clumps of tubers into small sections, each having an eye, plant the divisions in the holes, and cover approximately two inches. The holes are left open until the shoots break through and are then filled in when cultivating as the shoots grow up. Allow one or two shoots to each plant.

Never plant whole clumps of tubers, for you will then get too much foliage and a few good blooms. If you have some tubers left over, plant them in eight-inch flower pots; later these can be planted in flower beds or borders after the foxgloves and canterbury bells have finished blooming, and they will provide a nice display in the fall.

An application of weed killer on gravel paths and edges of driveways in May will save much work later in the season.

The second planting of gladiolus corms should be made about the middle of May.

Tuberose roots should be planted late in May and covered one half to one inch deep.

The Peruvian daffodil *(Ismene calathina)* can be planted in spots where tulips have been lifted, and they will flower within six weeks. The bulbs should be planted deep enough to provide a covering of approximately three inches.

In the vegetable garden peas will will require support in the form of pea brush or chicken wire, and sowings of seed should be made to keep a succession of young vegetables coming along. Seeds of late cabbage and broccoli can be sown outdoors in the last week of May; the seedlings will be ready for planting out the first week of July. Tomato, eggplant, and pepper plants can be set out in late May or early June after the ground has warmed up sufficiently. If the ground is too cold, these plants will be checked and turn yellow.

Cultivate flower beds and between rows of flowers and vegetables every week or ten days to keep weeds in check; at the same time look for damage by insects and plant diseases.

Spraying and dusting to control and prevent injury by disease or insects becomes a necessity with the arrival of the warmer weather. Much time can be saved by applying controls properly before the damage has become widespread. Be very certain that spray and dust materials reach the under side of the leaves. Use judgment in the selection of sprays and dust for use on vegetables. Pratt's D.X. is a safe spray material for the control of insects on edible plants. Spraying in the rose garden is easier when done as a preventive rather than a cure; and spray every seven to ten days.

Late in May or early June the lace-wing fly sometimes does considerable damage to azaleas and rhododendrons by sucking the plant juices from the underside of the leaves, causing the leaves to become a grayish green color. The lace-wing fly can be controlled by spraying with Wilson's "Linmite;" apply as directed on the container.

Spraying of fruit trees is another very important task in May and June. If you plan to do your own spraying, get your materials early and follow instructions on the containers carefully.

Inspect boxwood for leaf miners in late May or early June; if present, they will be found in small blisters in the leaves. The winter is passed in the larval stage and late in May or early in June they emerge as small yellowish flies. Spray with Wilson's "Linmite" or an equivalent as soon as the flies start emerging. One spraying at the proper time is all that is required, if weather conditions are favorable.

Strawberries should be fed with a good plant food early in May; cultivate as needed and mulch with clean straw when fruits start to form.

Prevent the formation of seed pods on pansy and viola plants, if you wish to prolong their blooming season.

Spring-flowering shrubs can be pruned after the flowers are past. It is important to remove the flowers from lilacs after they have faded and the seed pods from rhododendrons and mountain laurel. This practice makes more plant food available for the production of flower buds for the following spring.

The last planting of gladiolus should be made during the last week in June. An infestation of thrips is about the worst thing that can happen to gladiolus. Thrips are so small that it is difficult to see them, but the damage they do is easily seen and recognized in silvering and browning of the foliage and bleached areas on the flowers. Regular spraying every ten to fourteen days with Wilson's "Linmite" or Wilson's "Super-Cide" should provide sufficient control. Provide plenty of water for gladiolus whenever there is a dry spell of weather.

The lawn should be inspected carefully, if brown areas appear in late June. These areas may be caused by dry weather, but there is also the possibility that browning is caused by chinch bugs

sucking the plant juices and causing the grass to die. Chinch bugs are about one-eighth of an inch long and when fully grown are black with white wings. Control can be had by an application of one of the many chinch bug destroyers available at most garden centers. There are but two broods of chinch bugs each year; if not controlled, they can ruin the whole lawn. Chinch bugs, like crabgrass, prefer the open sunny lawn and are easy to find when the lawn is dry and the temperature is high.

JAMES M. GIBB

FROM MUD TO MARIGOLDS (from page 70)

trance or at the corner of a house. However, it may be overpowering unless properly placed and away from windows.

Fine specimens of hollies are to be seen at The New York Botanical Garden in the Conservatory courtyard.

Abelia grandiflora flowers all summer right to frost; the graceful pink bells are borne along arching stems. A very dainty shrub, abelia holds its bronzy foliage until late in the year.

While some people regard forsythias as common, they are, nevertheless, lovely when laden with their greenish-yellow to golden-yellow flowers in early spring, at the very time when hunger for color is at its peak. Some of the newer forsythia varieties have less aggressive growth and can be kept under control by cutting out the three or four-year-old canes systematically. Top pruning should be done with care, however, to avoid spoiling the natural grace of the plant. They are not for the foundation planting but can be effectively used elsewhere on the home property.

Deutzia, a free-flowering shrub available in a number of varieties, with clear white to purplish flowers in early summer on arching branches, will thrive in average soil. It likes full sun and good drainage.

Rose-of-Sharon can now be had in colors ranging from clear white to pink, rose, purple, blue, and even some blends. This shrub is somewhat stiff in appearance but compensates with bloom during late summer when there is a scarcity of tall-flowering material. It is perhaps best used in the background of the garden.

If you visit nurseries, you will see a large number of spring and summer-flowering shrubs; many of them grow to considerable size. Some landscape gardeners plant them much too close—their idea being to get immediate effects. But you must always keep in mind that plants need adequate space to grow well; when crowded, they cannot develop fully and become misshapen. Only a well developed plant will give permanent satisfaction. It is well worth your while to restrain your impatience for a few short years—the saving in work and money represents splendid dividends.

If the planting appears thin at the start all to the good; fill in with summer annuals. They will provide interest and good color until the permanent plants assert themselves.

Place shade trees where they are needed—around the play area, near the fireplace or picnic section, on the terrace. Trees of medium height are recommended for the moderate size home property. Some of the newer forms of the honey locust are not too tall and give light shade; their foliage makes a lovely pattern against the sky.

Pin oaks, too, make very reliable trees for the small place. While they will eventually grow into a large size, they are well anchored and the tops are not too overpowering for the home garden or as a street tree.

Dogwoods, crabapples, hawthornes, Japanese flowering cherries, and magnolias are among the smaller trees that make desirable specimens — they all have the added attraction of beautiful flowers—or may be incorporated in the background planting. A clump of white birch may please you in a corner of your property—and if you plant around its base some narcissi, grape-hyacinths, primroses, and forget-me-nots, you'll create a spring picture worth seeing. You might also plant a few 'Clara Butt' tulips and pansies for a touch of color around the birch trees after the early flowers pass their prime.

Do not clutter up the lawn area by dotting shrubs and trees all over. This is not desirable from the standpoint of good landscape design and also makes for a lot of maintenance.

In the plan that accompanied the second article in this series (see March-April 1956 issue of THE GARDEN JOURNAL) the areas marked No. 1 were to be given first attention.

For lawn making, I recommend a very excellent and inexpensive soft cover book — T. H. Everett's *Handbook on Lawns and Landscaping.*

Another up-to-date book on *What's New in Gardening,* by Dr. P. P. Pirone, gives the modern way to make your garden more beautiful. Both books can be obtained through Book Service, The New York Botanical Garden; see announcement page 89.

In the next issue I shall attempt to make a garden for the business couple with emphasis on maximum comfort and usability with the lowest and simplest maintenance I can visualize.

THESE ANNUALS WILL GROW IN SHADE

By G. Carl Ball

MANY horticultural subjects native to dense woodland are ideally suited for shade spots in the garden. Few of these, however, are to be found in the list of decorative annuals. However, the gardener whose planting area is either predominantly or only partially shaded can be rewarded by intense cultivation of those few annual bloomers which do well in shade. They alone can add that much-sought-after touch of color where it is needed most—in dark areas of the garden.

Authorities on gardening generally approach the subject of annuals for shade with considerable pessimism. One gardening encyclopedia advises to expect little—and you won't be disappointed. A book on annuals suggests that it is asking too much to expect flowers from annuals located in heavy shade. It is certainly true that most of the vegetation which nature supports in wooded, shaded locations is either perennial or leafy shrubs and small shade-adapted trees.

But in spite of these natural limitations, nature has indeed provided us a satisfactory selection of colorful shade-adapted annuals. Here is our list, not necessarily in order of preference.

Coleus derives its color effect from leaves rather than blooms, although the small, light blue blossoms which appear later in the season on terminal racemes are quite attractive.

But we rely on the foliage for color —and what a wealth of color it provides. Shades of rose-red, ivory, copper,

salmon abound between the contrasting green serrated margins. Coleus is really more attractive in some shade than in full sun because the light pink, yellow, and chartreuse colors are brighter and the leaf markings more prominent.

The Ball Rainbow Mixed strain is a brightly colored selection of medium leaf size. Separate colored varieties called 'Candidum,' 'Red Rainbow,' and 'Pink Rainbow' are also available. These remarkable strains were developed recently by intensive selection with the goal of increasing the amount of the bright, warm shades which are so well loved by gardeners the world over. They were developed principally for florist use (seed propagation is less expensive than cutting propagation of coleus), but many professional and amateur gardeners are now switching over to seed from which to raise their coleus plants.

For best results, coleus should be started indoors (they are sub-tropical and like lots of heat for germination) and planted out after the last frost. The denser the shade, the more coleus will stretch or elongate in search of sufficient light to develop its attractive leaf pigmentation. So when your plants begin to appear "leggy," pinch them back "hard" no matter how you dislike doing this! You will find that coleus have a remarkable ability to "break" from a pinch, and in a matter of weeks you'll have a plant with a handsome shape and brightly colored leaves.

Fully as satisfactory for shade, and perhaps even more simple and charming than other flowers, are the lovely impatiens, variously known as Sultana, John the Baptist, of the Balsam family. Dark green foliage makes an ideal setting for the lovely five-parted, inch to inch-and-a-half blooms, which occur at regularly spaced intervals across the blooming bush-like plant. From seed, we much prefer the dwarf varieties and mixture, even though they have somewhat less color range than we should like. Actually, only shades of rose and orange are found in the mixture, in spite of what some over-optimistic seed catalogs may say!

Impatiens are quite tolerant of soils, but do like a fairly steady supply of moisture. They will bloom continuously throughout the season, reaching a height of twelve to eighteen inches. Fine strains of white and bright red in the dwarf types are available from cuttings, but not as yet from seed.

The versatile begonias seem to do well in shade. But there is one, *B. semperflorens,* which has a compact, bushy habit of growth and, as the name implies, blooms continuously throughout the season. The blooms are small but brightly colored, in red, rose, salmon, pink, and white, with various combinations of contrasting foliage color, ranging from bright green to a deep bronze red. 'Adeline,' for example, has a lovely medium pink bloom against green foliage; 'Indian Maid' is a scarlet on bronze leaves. The whites are mostly green-leaved, as is the favorite 'Ball Red.'

Dark green foliage makes an ideal foil for the lovely five-parted blooms of this dwarf impatiens.

Semperflorens begonias are extremely popular in continental Europe. In France, Switzerland, and Germany, for example, they are probably more widely used than petunias are used in America! While definitely preferring shade, this type of begonia will stand sun — even full sun — as we have seen them successfully grown in open sun in extremely hot weather near Chicago. This tolerance of different light conditions is not common among plants. The dwarfer sorts—eight to ten inches—are excellent for edging and borders; the medium to tall varieties are ideal for mass plantings. Begonias show off well around yews in shady spots; the red leaves and flowers seem to contrast well with the deep green yew foliage.

Begonias are a tender subject and must, of course, be started indoors early from seeds or plants bought from a plant grower. Take care not to smother the fine seed by over-covering them. They're exceptionally small—one million to the ounce—and worth five times their weight in gold! But they will germinate readily if provided with plenty of moisture and heat. To assure success in the garden, established plants should be set out in well-drained soil, not too rich to injure the fibrous roots.

We nominate coleus, impatiens, and begonias for the three most successful, partial to dense shade annuals. Other possibilities for less dense shade are asters, snapdragons, and salvia. Avoid marigolds, zinnias, and petunias in shady spots—you're almost sure to be disappointed.

Gloxinias and tuberous begonias, both very comfortable in heavy shade, may be grown either from tubers or seed. The seed, of course, is quite fine, and these slow-growing subjects must be started in midwinter to have fully satisfactory plants for the summer garden.

For blue in the shade garden, a color not adequately represented in any of the above-mentioned subjects, try torenia, a dwarf plant with small but attractive yellow-blotched lavender-blue petals. Blue lobelia, too, is an excellent source of sparkling violet-blue on an even more dwarf (less than six inches) plant. It makes a neat and compact edging plant.

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A FLORA FOR THE LITERATE

By H. W. Rickett

THE ENGLISH LANGUAGE is well known for a noble and a beautiful instrument, though often debased in the hands of modern writers. Its words come to us adorned with a thousand years of old story, of legend and lore, of the lives of men and women. Of none is this more true than of the names for flowers, the old country names, which came from daily encounter and daily use: "men and plants are old acquaintances."

Nowadays we have Floras in which to look up the names of plants; works replete with keys for the identification of the unknown, which lead to pages whereon our plant is named and described in a profusion of detail and a strange jargon compounded of fragments of Greek and Latin; with drawings (if we are fortunate) to illustrate the diagnostic details. The "common names" also are appended, with a somewhat deprecatory air. In this country we have a flora rich in species and a people which did not grow up with them. Many plants lack English names; some of the "common" ones are anything but common, artificially concocted things of no particular interest.

Few will contest the usefulness of the technical manuals; certainly I shall not. However, they do not wholly satisfy in our dealings with nature. When we have identified a plant—what then? The lack has not been filled by other works, whether written by botanists or laymen. Generally the scientist cannot write—or has no time to write—or has no interest beyond his technical preoccupations. And generally those who write know little of the natural world around them.

It was not always true that only the scientist was interested in nature. When I was a boy I knew most of the flowers of English roadsides and meadows and could call them by Latin as well as English names. My father, a musician, taught them to me; neither of us had any thought of professional botany. Perhaps fewer persons have such interests today, at least in America. But there are still some; and for them Geoffrey Grigson writes.

Grigson is no more a botanist than my father was; he is a poet. He calls his book *The Englishman's Flora;* but in it you will find no keys for identification, no technical descriptions, in fact no descriptions at all which would enable you to recognize a plant. You must know your plants *before* you can use this Flora.

I have said what it is not. What it is may best be gathered from the "Foreword." "Men and plants are old acquaintances," he writes, "so . . . I have taken those plants, common and less common, and rare, which can be found in the British Isles, and which have their own human dossier . . . What names have these plants been given? Are they native or have they been introduced? . . . And what have they meant, generation after generation, to the Englishman in his daily life, in his ceremonies of spring, summer, and winter, his practice of magic and medicine, his feeding of body and mind?"

There you have it: this is not a tool for identifying unknown plants but a history of plants known, of their meaning to Englishmen. This is what that title stands for. And since many of the British plants have come to these shores and are now at home here—sometimes regrettably so,—since others are circumpolar, or have close relatives here, the *Flora* belongs to Americans as well as to Englishmen; as well for the plants as for the language.

The introduction continues in the same easy style to sketch how plants have built up their "dossiers" through the long ages of English history. Since through all of this period—and not excepting modern times—man has been a superstitious animal addicted to trying to control the natural world by magical and other means, it is inevitable that many of the names and uses of plants should hint at sorcery and medicine, at fairies and devils. Grigson suspects that housewives of past centuries knew many more plants by name and reputation than even country housewives know today. They had to. And that they mixed magic with cookery and healing was not surprising. "After all," he says, "how remarkable that if you eat a plant, it keeps you alive! How remarkable that some plants do the opposite, and do it with despatch; that others affect the mind . . ."

So each species is introduced to us by its English name, which is followed by the approved Latin binomial; and then come all the other British names that he could find, classified by counties; sometimes to an astonishing number—more than a quarto page of them for cuckoo-pint and several others. To read them is to savor anew the language of Chaucer, Shakespeare, and Milton. Listen to these, under daisy, that commonest of weeds in English lawns: bairnwort, banewort, banwood, bennergowan, Bessy-bairnwort, Billy button, cat posy, curl-doddy, day's eye, dog daisy, golland, gracy daisy, innocent, Mary gowlan, May gowan, Miss Modesty, open eye, silver pennies, twelve disciples, white frills . . .

Toadflax, so called because it was a weed in the flax fields, is not only butter-and-eggs, as we know it here, but bacon-and-eggs, bread-and-cheese, buttered haycocks (I like that one), chopped eggs, doggies, dog's-mouth, bunny rabbits, fox and hounds, monkey-flower, mouse's mouth, pig's chops, weasel-snout . . .

And for dogwood we have also cat-tree, cat-wood, cornalee, cornwood, devil-may-care, dog-timber, gatter-bush (i.e. goat's bush), prickwood, skewer wood, skiver-timber, snakes' cherries . . . and he quotes Parkinson on "dogge berry" a name given "because the berries are not fit to be eaten, or to be given to a dogge." The names compounded with cat, dog, and goat, he says, speak of a contempt for the plant which we no longer share. It is strange that he does not mention the old practice of making a decoction of the fruit to treat mange in dogs; another explanation of the name dogberry. With which thought in mind, I wonder, did Shakespeare name one of his clowns? Hemlock is called bad man's oatmeal, break-your-mother's-heart, bunk, caise, cartwheel, devil's blossom, gipsy flower, gipsy curtains. The "bad man" is, of course, the devil, often given his due by the country folk; elsewhere he appears as the "naughty man." In Somerset "naughty man's plaything" is the common stinging nettle, and in Buckinghamshire the deadly nightshade is "naughty man's cherries."

(Continued on page 83)

AS WE GROW
ROSES
AT "RED OAKS"

By Edward J. O'Keefe

SINCE PREHISTORIC TIMES the rose has been the best known and best loved of all our flowers. It appears in the earliest art and poetry. It was sacred to Aphrodite and a favorite of the Romans. It was a symbol for the Houses of York and Lancaster in early England. In a sense the rose is a product of all the significant civilizations of the past.

For nearly forty years the rose gardens at "Red Oaks" have been carefully planned and conscientiously cared for. Here old favorites are cherished and new varieties tried; cultural procedures that have proved successful over the years are modified and improved as newer and more efficient methods are devised.

The culture of roses does not differ materially from that of most other decorative plants. Any soil that will grow perennials, shrubs, or lawns will without special treatment grow good roses.

Many people have the mistaken idea that it is necessary to devote a given area just for the growing of roses. Today roses are being used more and more by the small land owner, in conjunction with his annual or perennial border, as a hedge dividing two properties or service areas. They are located at various places to give accent and color to the home grounds throughout the season.

It is important to select a location where your roses will receive at least six hours of sunlight a day. If it is full sunlight, so much the better, although a little shade late in the day is an asset in protecting the plants from excessive heat and helps flowers to retain color. Morning shade is not as desirable, since the foliage does not dry off quickly which encourages disease.

Left. above. Looking down the path in the rose garden beneath an arch of rose 'Gardenia;' Rose 'Snowburst' borders the pool. Left. Rose 'La Marne' grows in front of the white picket fence; rose 'Gardenia' on the fence.

Roses may be planted in the spring or fall, depending upon the individual gardener. Here in the metropolitan area we begin to remove our winter mulch about the middle of March. It is best to choose a dull day so that the canes are not exposed to direct sunlight too suddenly, causing them to dry out.

The time to prune roses varies with the season, the best indication is given by the plants themselves; when leaf buds swell but new growth has not yet started, remove all dead, diseased, and broken canes. In the case of hybrid teas and floribundas, the remaining canes are shortened to six to eight inches. When pruning, you should also shape your plants; leave the center canes an inch or two longer to make a more pleasing bush. When roses are grown in beds or groups, the ones in the center should be left a few inches taller than those toward the outside. This will insure a better view of the blooms in the center of the beds, as well as give a more attractive over-all garden.

In the case of climbing roses, only dead or broken canes are removed in the spring. The recommended time for pruning is usually in July after they have finished blooming. Climbing roses, for the most part, produce bloom on the older canes, two years or more in age. Where you have very old plants with many canes, about one third of the oldest canes should be cut back to ground level. This will tend to rejuvenate the plants and encourage them to send out new growth from the base. The flower clusters on the remaining canes should be removed, leaving four to twelve inches of lateral branch to produce blooms next year. The relatively new group of everblooming climbers requires only the removal of the withered flowers, since the recurrent bloom will be found in the axil of the first normal leaf.

In normally good garden soil, two or three applications of a commercial fertilizer is sufficient. The gardener may use 5-10-5, 4-12-4, or one of the specially prepared rose foods for this feeding. The normal rate of application is four pounds per hundred square feet or a small handful per plant.

In the spring when new growth has reached about two inches, the first feeding is given. By waiting until new growth has started, there is less likelihood of forcing plants into growth too soon and thus causing damage by a late frost. A second application, if necessary, can be given the middle of May so it will be available to the large June crop. The final application is applied not later than July 15. Later feedings have a tendency to force the plants into new growth late in the season. This growth does not have a chance to harden properly before cold weather, thus making the plants more susceptible to winter injury and causing an overall weakening.

To further insure healthy and vigorous plants, you must protect them from disease and insects either by spraying or dusting. The method you select depends, for the most part, on your individual preference since both will give adequate control.

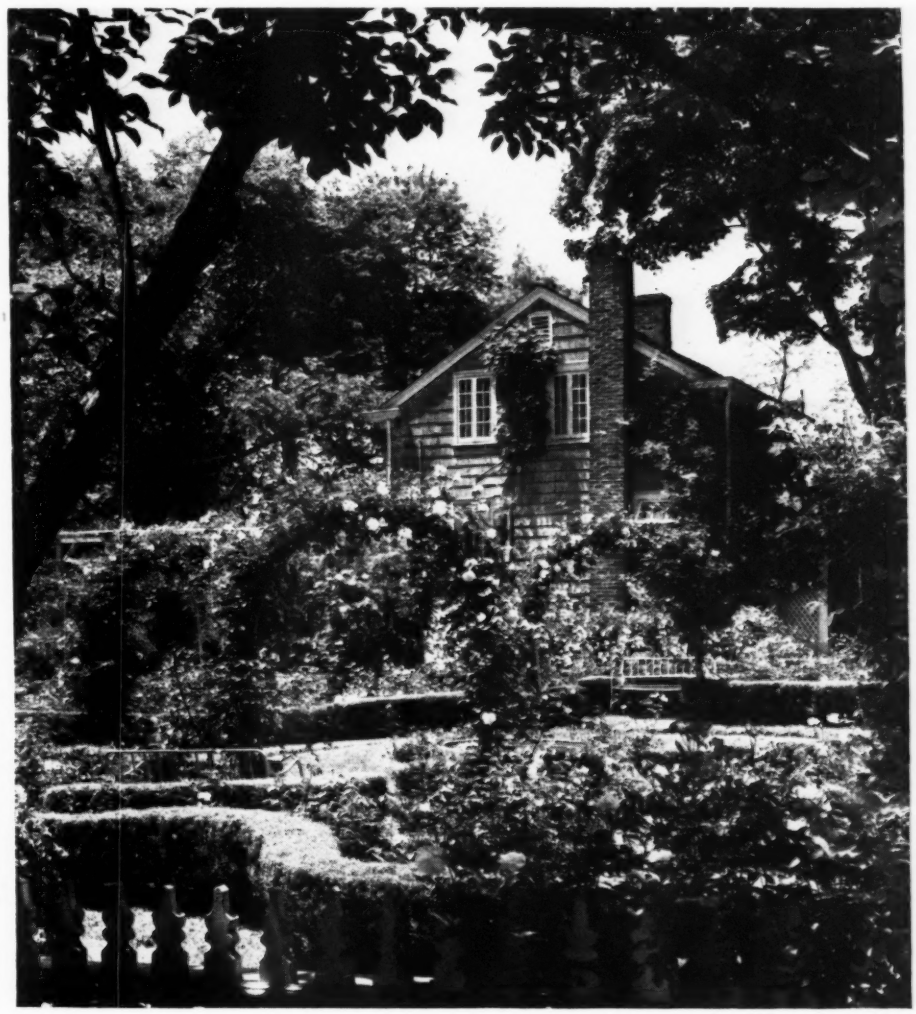
For most purposes it is more feasible to purchase an all-purpose spray or dust. For those who wish to prepare their own spray, I have used the formula on page 82 with considerable success.

To the above formula a good sticking agent should be added at the manufacturer's directions. When mixing these materials, it is much easier to use a small amount of water until you have the consistency of a light paste; then the correct amount of water for the finished spray.

The spray or dusting program should begin as soon as new growth starts rather than waiting until disease or insects become apparent. It is much easier to prevent infection than to cure it.

From early spring until June bloom, the plants grow very rapidly. Therefore, during this period they should be sprayed or dusted every five to seven days. During the very hot days in July and August, growth is relatively slow so that dusting every two to three weeks will give adequate control.

(Continued on page 82)



The author's cottage is most fortunately situated near the rose garden at "Red Oaks."

Grandiflora rose 'Montezuma'

ROSES IN ENGLAND

SUMMER 1955

By Edwin De T. Bechtel

Floribunda rose 'Golden Fleece'

The Summer Show of the National Rose Society at London

On our way to "take the cure" at Badenweiler in the Black Forest near the Swiss and French borders, we arrived in Paris early in June, 1955. As guests we attended the judging of roses at the Concours Internationale des Roses Nouvelles at Bagatelle, where Eugene Boerner of Jackson & Perkins won the gold medal for his floribunda, 'Golden Fleece.' At the reception and luncheon which followed, we met famous rose men from many countries. We visited some of our friends in their rose nurseries and gardens near Paris, then hurried to Geneva to attend the judging of new roses at the trial grounds in La Grange Park. At the reception which followed, it was announced that Swim of the Armstrong Nurseries had won the two highest awards, for the grandiflora, 'Montezuma,' and the floribunda, 'Circus.' Of course, the rose garden in La Grange Park is one of the great rose gardens of Europe, and the planting of hybrid teas and floribundas by the lakeside is preeminent.

Roses were everywhere as we entered the Romerbad at Badenweiler: in the park in front of the hotel, in the gardens behind it, and on seventy-five tables in the dining room.

After a fortnight of the cure and the prospect of a short period of grace from its rigors, rose gardens, rose shows, and rose experts beckoned from many directions. The summer show of the National Rose Society at London won; and the evening before it opened, we flew from Basel to London. We did not realize that we were to complete our "Rose Circuit" later, from Baden-Baden to Cassel, Hamburg, Schleswig Holstein, and Denmark. But that story has been told elsewhere.

In London, thanks to our press ticket, we were able to enter the National Rose Society Summer Show at Vincent Square before its opening on the morning of July 1. In the amateurs' section, in the Old Hall, we found our friends, Maurice L. Kemp of Halstead, Essex, and Robert White of Ashenden, Bucks. Mr. Kemp was the amateur champion for the 1952, 1953, and 1954 N.R.S. Summer Shows. He personally takes care of the three thousand rose plants in his garden. Mr. White also takes care of his fifteen hundred or more plants. In 1954 he won the Mawley Challenge Cup at the summer show of the N.R.S., for twelve specimen blooms, and he has won many firsts through the years. In 1952, at the Autumn Show of the N.R.S., which we visited, his 'Glory of Rome' was the best bloom shown by any amateur. We shall mention later other triumphs of Mr. White, in describing our visit to his home north of Aylesbury, overlooking the Chiltern Hills.

With other exhibitors in the amateur section of the Summer Show, Mr. Kemp and Mr. White were concentrated on placing the finishing touches on their exhibits of boxes and bowls. They were not ready to cut the loops of yarn, which held the petals closely to the bud, until shortly before the judging. Then they carefully cut the loops and with camel's hair brushes delicately coaxed the petals to curl. This is the art of "dressing the rose." They were both successful in a number of classes, but the outstanding award was Mr. Kemp's. In both the amateur and trade sections, the typical boxes holding six, twelve, or twenty-four blooms represented the roses at their best: stems and foliage are not shown; and these box classes are a severe test of the quality, color, and form of the blooms. Mr. Kemp won the Lindsell cup for twenty-four specimen blooms; the perfection of these twenty-four roses surpassed any selection or showing of roses I have ever seen. The marvel of Mr. Kemp's box of twenty-four was that they were all symmetrical and harmonious, and all were different.

In the trade section, in the New Hall, although the exhibits were affected by the unfavorable weather and some growers were unable to show, there were many impressive exhibits. The National Rose Society awarded four gold medals to new roses, based on their records at the Trial Grounds at Oaklands, and the further finding that these roses "should be considered an acquisition to our list of varieties for some novel or outstanding quality." These roses were: 1. 'Queen Elizabeth,' a light pink grandiflora originated by Lammaerts, and 2. 'Cleopatra,' a bi-colored hybrid tea in red and soft yellow, originated by Kordes, both shown by Wheatcroft. (Later, Kordes himself showed us 'Cleopatra,' at his nursery in Holstein.) 3. 'Sir Winston Churchill,' a salmon-pink hybrid tea with some orange coloring, originated and shown by Alex. Dickson and Sons. 4. 'Circus,' the multi-colored floribunda originated by Swim of the Armstrong Nurseries, shown by R. Harkness and Co.

Two 1954 gold medal winners were very attractive at the 1955 show: Boerner's floribunda 'Spartan,' a pleasing

rich salmon, and McGredy's floribunda 'Yellowhammer,' a deep golden-yellow. Both are fragrant.

Among the winners of Certificates of Merit, the new McGredy hybrid tea 'Lilac Time' should be mentioned. Its unusual, delicate lilac color is more pleasing than the tones of the Meilland hybrid teas, 'Pigalle' and 'Prelude,' or of the floribunda 'Lavender Pinocchio.' The search for "the blue rose" seems to end in lavenders, purples, and dirty grays.

R. Harkness and Co. of Hitchin, in Hertfordshire, whose fine nurseries we have visited, again won the Queen Mary Challenge Cup and the Championship Trophy. Theirs was the most important "island" in the central part of the hall, with the many varieties so arranged in containers that the blooms rose to a huge pyramid with the long sides so spaced as to present undulating banks of color. Last year's medal-winning hybrid tea, 'Burnaby' (primrose yellow, a Canadian origination); 'Ena Harkness,' and two California hybrid teas, 'Mojave' and 'La Jolla,' were in top form; there were cascades of 'Grandmere Jenny'; 'Lady Belper,' a Dutch hybrid tea, and the new Norman hybrid tea, 'Dilys Allen,' were notable.

The Coronation Trophy for a smaller island exhibit was won by B. R. Cant and Sons, Ltd. 'Dainty Maid,' a bright pink polyantha hybrid with silvery pink reverse, which won an N.R.S. gold medal in 1954, was excellent in this display.

Wheatcroft Brothers' non-competitive display included many new Meilland originations. The new white, 'Message,' is not as good a white hybrid tea as 'Virgo' in the opinion of some of the French nurserymen, who think it a better hothouse than outdoor rose. 'Belle Blonde' appears to be a good new golden-yellow hybrid tea. 'Soraya,' named for the young queen of Persia is orange-red and remarkable in shape and fragrance. 'Grand Gala,' another extraordinary hybrid tea, is vivid, velvety scarlet within and pale rose without. The new floribunda, 'Magenta,' is startling. The Wheatcroft catalogue describes it: "Deep wine-stained buds in arching sprays develop into large flowers of warm rosy magenta, aging to a soft deep mauve."

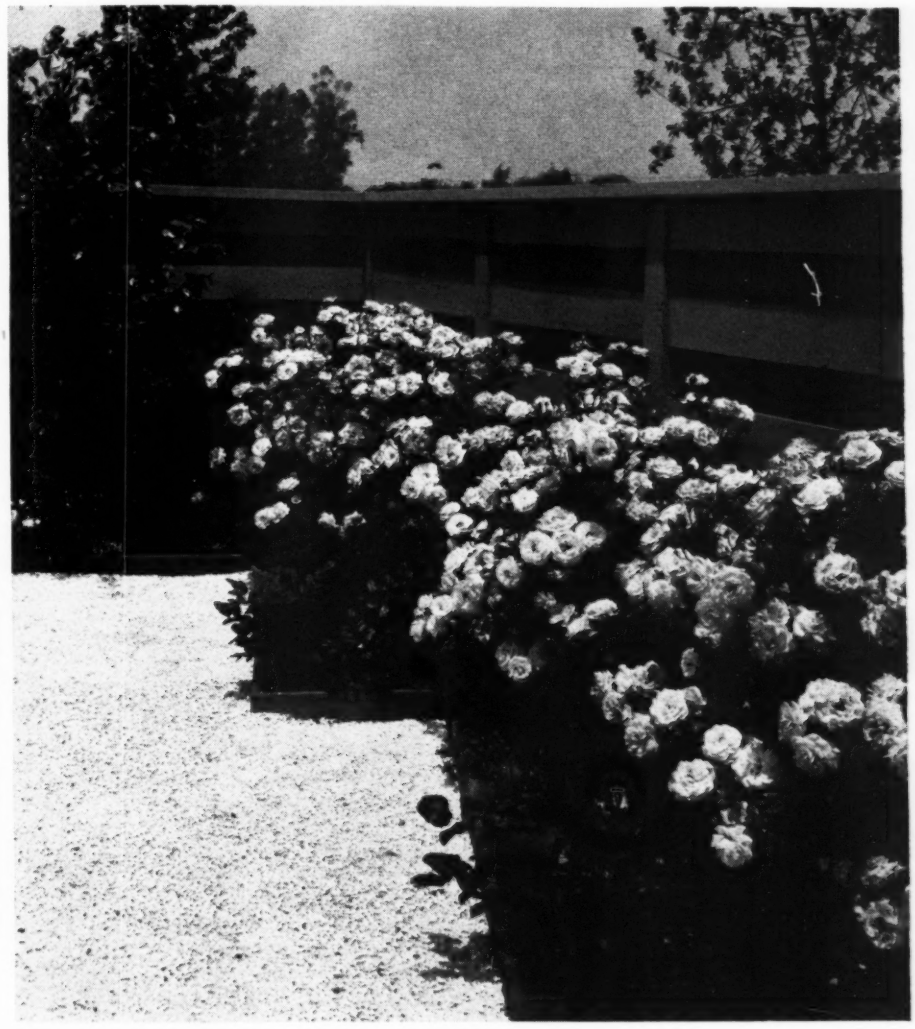
Wheatcroft's "most exciting new rose since 'Peace'" is, of course, Lammaerts' 'Queen Elizabeth,' which was shown with special emphasis and effect at the Summer Show, and also at the Chelsea Show of the R.H.S. in May, where it was placed on a special table draped with royal blue velvet. The Wheatcroft catalog describes this grandiflora as: "Soft carmine-rose and dawn-pink, hitherto found only in the choicest cattleya orchids and never before captured in a rose." Such an exotic description proves the wisdom of a defined rose-color classification.

The medal for the best bloom in the amateur section was awarded for a fine example of the great English hybrid tea, 'Ena Harkness.' In the nurserymen's classes, a similar medal was awarded for the dependable old exhibitor's rose, 'Mrs. Charles Lamplough,' a McGredy hybrid tea originated in 1920, a daughter of 'Frau Karl Druschki.' This brilliantly disproved the assertion that the older roses soon deteriorate, because they depend upon vegetative propagation.

The great company of shrub roses, old and new, and of hybrid species, at this show, many of which were propagated by budding, also tended to prove that budding does not inevitably lead to early extinction.

There were three important exhibits of these roses. In spite of their number and the variety of their forms, colors, and fragrance, they were not mentioned in the press reports of the show. Nevertheless, many enthusiastic rose lovers gathered around these tables to admire and ask questions, as well as to give orders. The three exhibitors were: T. Hilling & Co., of Woking, who advertised over four hundred "Roses as Flowering Shrubs; Species and Old-Fashioned Varieties including Climbers;" Hillier and Son of Winchester; and Edwin Murrell of Shrewsbury.

The Hilling exhibit with over a



Floribunda rose 'Circus.'

hundred varieties was in charge of the well-known authority on old roses, Graham S. Thomas, whose book *The Old Shrub Roses* (Phoenix House, London) appeared last fall. At the show we discussed many of his favorite varieties with him. Some of the loveliest and most interesting were the Alba hybrids, 'Mme. Legras de Saint-Germain,' 'Maxima,' 'Belle Amour,' and 'Celeste;' and the Damask hybrids, 'Mme. Hardy' (a special favorite of Mr. Thomas), 'La Ville de Bruxelles,' and 'Kazanlik.' Mr. Thomas has many favorite centifolias and Bourbons, but his Gallica hybrids were of greatest interest to us. One should mention 'Belle de Crècy' (a great favorite both with Mr. Thomas and with Sacheverell Sitwell), 'Charles de Mills,' 'Assemblage des Beautès,' 'Duchesse de Montebello,' and "The Old Velvet Rose" 'Tuscany.'

Like Dr. C. C. Hurst, Mr. Thomas prefers the species name *Rosa rubra,* instead of *Rosa gallica;* and, like Sacheverell Sitwell, in Part I of *Old Garden Roses* (George Rainbird, London, 1955) he extols the lilacs, mauves, purples, and violets, particularly of the Gallica hybrids. Both admit that fondness for these colors is an acquired taste; and that some of the old roses are subject to black spot, but not victims to it.

During the Saturday session of the nurserymen's section of the show, we saw our friend Sam McGredy, an optimistic nurseryman of a great rose family; we talked with M. Jean Gaujard, the successor to and owner of the Pernet Ducher Nursery at Lyons, originator of his very successful hybrid teas 'Opera' and 'Ville de Gand' and the more recent 'Madame L. Cuny'; we met A. Norman, the very successful English hybridizer who, out of 'Crimson Glory,' originated 'Ena Harkness' and the floribunda 'Frensham.' He is most competent and modest. At our luncheon with Mr. and Mrs. Bertram Park, we managed to squeeze into an hour a score of subjects which the Honorable Secretary of the National Rose Society discussed with authority, from understocks to the merits of the newest roses.

Queen Mary's Rose Garden In Regent's Park

On leaving the N.R.S. Summer Show, we visited Queen Mary's Rose Garden in Regent's Park. We had first seen it in 1952 at the time of the meetings of the International Horticultural Congress in London. Then, with the exception of some of the newest roses, the roses were poor and defoliated with black spot; and due probably to severe pruning and lack of fertilizers, many of the plants were only fifteen inches high. When we entered at Baker Street and walked along the lake to the rose garden, we found a complete transformation. Apparently new beds had been made, many of the newer roses had been planted, the beds seemed well cultivated, the plants vigorous, and the blooms large and profuse. 'Ena Harkness,' 'Spek's Yellow,' 'Karl Herbst' and a good representation of recent French and American hybrid teas were excellent. The floribundas, English, French, German, Danish, and American, seemed very satisfactory. But two beds of hybrid teas surpassed all others. One, of course, was 'Peace'; the other, 'Lucie Marie,' was the buttercup-yellow origination of Dickson, twenty-five years old. The N.R.S. Annual of the year 1935, in describing the origin of the Regent's Park Garden refers to the planting of 'Lucie Marie' as a superior rose notable for its continuous bloom.

This garden dates from about 1932, when, during the period of dire business distress, the rose nurserymen of Britain to stimulate the demand for roses, offered to donate all the rose plants necessary for the establishment of a rose garden worthy of London. In the emergency, the public authorities promptly assisted in planning and planting a large area along and near the lakeside with sixteen thousand plants. There are several thousand more plants today including old and new hybrid teas, hybrid polyanthas, floribundas, with marginal plantings of climbers and some species and hybrid species and so-called old roses. There are many large rectangular, oval, and oblong beds, each containing as many as ten or more dozen plants. The beds are arranged without the formality that is so characteristic of Bagatelle at Paris, the great Retiro rose garden in Madrid, and the magnificent La Grange rose garden at Geneva. The beds with ample spaces of grass between them, as at Kew Gardens, follow in their arrangement the contours, shapes, and walks of this subdivision of the Park and the curving banks of the lake with its beautifully planted island rock garden.

In the late afternoon the Regent's Park Rose Garden was crowded with visitors, standing, sitting, and even lying on the grass among the rose beds. We flew back to Switzerland by the night plane. Returning to London a month later, homeward bound, we found this garden devastated by black spot and mildew. These diseases were prevalent elsewhere and we marvelled that English gardeners often accept them without anxiety.

To be continued in the July-August number.

ROSES AT "RED OAKS" **(from page 79)**

The use of a mulch is becoming increasingly popular. Peat moss, salt hay, buckwheat hulls, and ground corn husks are just a few of the materials that can be used. To be effective, the mulch should be at least two inches thick. Mulching eliminates many of the weeds, cultivating, and watering.

If it is necessary to water your plants at any time, be sure to keep water off the foliage. A water wand or the soil soaker hoses, which are made of a porous material, will do an excellent job.

There is a group of roses that has not attained the popularity that it deserves —I believe this is due partly to lack of publicity. These are the single roses, whose dainty and charming blooms come in a wide variety of colors. They all

Ingredient	per	1 gal.	per 50 gal.	to control
Fermate or Captan	1-2	tbs.	1 lb.	blackspot
Wettable sulphur	1-2	tbs.	1 lb.	mildew
Nicotine sulphate 40	1	tsp.	½ pt.	aphids, other insects
Aramite 15 w	1-2	tbs.	1 lb.	red spider mite
DDT 50 wettable	2	tbs.	1-2 lb.	only when Japanese beetle is a problem

have a single row of petals surrounding very colorful stamens. Their habit of growth and cultural requirements approximate those of the hybrid tea.

A few of the varieties that we grow at "Red Oaks" are 'Innocence,' a large pure white with wine-red stamens; 'Dainty Bess,' silvery salmon-pink with maroon-colored center, the petals notched and fluted; 'Isobel,' opening with a bronze tone and developing shades of orange-pink; and 'Vesuvius,' a glowing fiery crimson which does not fade, with light green foliage. The fact that these single roses close at night seems to emphasize their fragile beauty.

FRUIT **(from page 69)**

stocks has been done here, particularly with the stone fruits. *Prunus tomentosa*, the Nanking cherry, is recommended for plums and peaches and the beach plum as understock for sweet cherries.

When planting, be it either espalier or bush, select a spot suitable as to exposure and soil. A good garden soil is satisfactory, not too heavy nor too rich, at the commencement of their development, as fertilization may be given later when the trees produce. An open sunny position is necessary. Apples, pears, peaches do well on walls with a southern exposure; plums and cherries on a west wall; Morello cherries seem to do equally as well on a wall facing north as they do on other exposures. An important point to observe when planting is that the point of union of understock and tree proper must be a few inches above ground. Allowance for settlement of the soil, or filling in "dishing" around the stem, for watering, should be made; otherwise the union may become buried. Apples particularly are apt to produce roots above the union; should this condition occur, the effect of the dwarfing stock is nullified. Good-sized holes, at least a foot larger in diameter than the spread of the roots, should be ready to receive the trees, and the trees should be soaked after they are planted.

Not all varieties of the different fruits are self-fertile, so it becomes necessary to plant more than one variety in a group. Most nurserymen draw attention to this factor in their lists of stock, and name those which are more or less sterile and those which will give good pollenization.

Currently, the trend in dwarf fruit trees is toward a tree grown naturally, with a short stem and without any particular training of a formal nature. Although definitely not in the espalier class and produced primarily for the small garden owner, a brief discussion of their value will be given. Apples on Malling No. 9 are in greatest demand, the pears second. Apples on semi-dwarfing Malling stocks are appearing in nursery lists, the number of varieties offered increasing with them. The first-named stock, while being excellent for bush or espalier, has one particular failing when used to produce a tree. It is surface rooting and unless supported by a post or stake is liable at some time of its life to be uprooted by the wind. It does, however, when budded to suitable sorts, produce fruit a year or two from its start and on a tree of small stature with the minimum of care and attention. Spraying, of course, is as necessary as with any other type tree, and pruning consists chiefly in removing weak or crowding and unnecessary branches to admit light. Personally, I think the best method of treating these trees, whether on No. 9 or the semi-dwarfing stocks, is to adopt some shaping method from the beginning, summer prune to induce early spurring and limit the height and spread as desired.

FLORA **(from page 77)**

What is the matter with our imagination, that we no longer give names to things? We see plants, but we no longer name them—perhaps because we do not use them. Do we even really see them? My students used to ask me, when confronted by several English names for the same species, which was the "correct" name! Or, when they came across the same name used elsewhere for a different plant from the one they knew, which was "the true spring beauty"!

Some of the derivations are interesting. Service tree (sarvice-berry in Missouri, but not the same plant) is from *serves*, Old English *syrfe*, which is from the Latin *sorbus* — still the generic name. Many of the old names have lost their meaning. Why is forget-me-not called mammy flooer in the Shetlands? How did bugloss come to be called Our Lord's flannel? Devil's guts for bindweed is plain enough — perhaps a bit too plain for some; but why billy-clipper and laplove?

Red campion is a "plant of snake, of devil, goblin, and of death, if it is picked." It is often found growing with bluebells and purple orchis, and the three share some of their names: granfer-griggle (whatever that may mean), adder's flowers, bloody man's finger. The names and the kinship depend "on a sexual and supernatural basis no longer absolutely clear." And why was the picking of poppies likely to cause a thunderstorm? The uses of other plants are better understood. Bog myrtle provided faggots for the oven, kept fleas away (Highlanders slept on flea-proof beds!), was put in linen to repel moths, furnished a yellow dye, and, most important of all, imparted a flavor to ale and beer (before hops came in).

And so it goes; these few extracts must suffice to give an idea of the flavor and meaning of the book. It is inexhaustible. The herbals, naturally, meet you on every page; as do the English poets, including some of the minor ones who were singularly happy in their treatment of nature. There are four hundred and sixty-five species, arranged as in the latest *Flora of the British Isles;* which, seeing that grasses and sedges have been left out, must represent the British flora fairly completely. There are comprehensive indexes to scientific and English names, to local names, to names of Celtic derivation. There is an excellent bibliography, the first item in which is Alexander, E. J. and Woodward, C. H., *The Flora of the Unicorn Tapestries.*

The book is beautifully printed on a fine antique paper in quarto, the title and headings attractively decorated. It is illustrated with forty-four fine reproductions of woodcuts from four of the best herbals—Bock, Brunfels, Fuchs, Mattioli. A few curious misprints mar the otherwise good production: "gipsies" turns up, unpronounceably, as "igpsies" in one place; and a former curator of The New York Botanical Garden looks strange as "Moldenko." But to mention such slips is mere carping. This is a book which no one who speaks English and loves plants should be without. It is a matter for regret that the price here (much of it duty) will deter many who should have it from buying it. No one, probably, will give it to me for Christmas; but I can always hope.

THE ENGLISHMAN'S FLORA. Geoffrey Grigson. 478 pages, illustrated with woodcuts from the sixteenth century herbals. Macmillan, New York. 1955. $20

ELMER DREW MERRILL
1876-1956

By H. W. Rickett

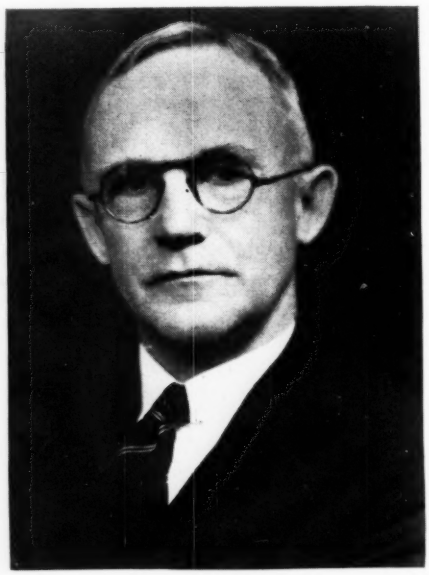
"IT IS GIVEN to few men who carry the burdens of an important office . . . over a period of years, to close their labors . . . on terms of friendship with all with whom they come in contact..."

These words were written in 1930, when Merrill left California for New York, and testify to an extraordinary administrative career. Five years later the Board of Managers of The New York Botanical Garden wrote that they had noted, "with wonder and admiration, Dr. Merrill's ability, in spite of exacting executive duties, to continue his systematic studies of Oriental plants . . . ; that they have observed with satisfaction the honors that have been bestowed upon him by American, foreign, and international scientific organizations."

This was the pattern of Merrill's life: an administrative record that few can equal; a many-sided scientific achievement that brought him world-wide recognition. The story of his professional life has been several times told, all but the last few years; it is here presented summarily.

Merrill was born in East Auburn, Maine, on 15 October 1876. He embarked on a scholarly career immediately after having received the degree of Bachelor of Science from the University of Maine in 1898. He was an Assistant in the same institution during 1898 and 1899, and published a paper on Maine plants which appeared in *Rhodora* in 1899. He was then appointed to the United States Department of Agriculture in Washington as Assistant Agrostologist, in which position he remained three years. A number of articles on grasses testify to the energy and application which were to characterize him in all his undertakings; the first was "A criticism on certain new species of *Panicum*." Then came the change which determined his career. In 1902 he accepted a position as Botanist in the Insular Bureau of Agriculture in Manila, which was later incorporated in the Philippine Bureau of Science. He was Director of this institution from 1919 to 1923. From 1912 to 1917 he was Associate Professor of Botany in the University of the Philippines, from 1917 to 1919 Professor, from 1919 to 1923 Professorial Lecturer. During the period of his residence in the Philippines, he made many journeys in Malaysia and China and also visited Europe, Hawaii, and the United States.

In 1924 Merrill returned to this country as Dean of the College of Agriculture, Director of the Experiment Station, and Professor of Agriculture in the University of California at Berkeley. This is not the sort of appointment one would expect for a man interested principally in systematic botany and phytogeography. The state-



Elmer Drew Merrill

ment quoted at the beginning of this sketch is evidence that his administration was a successful one. In January 1930 he came to The New York Botanical Garden as Director and stayed until 1935; being also Professor of Botany in Columbia University. It was a difficult time, in the depths of a world-wide financial depression; he successfully used the workers of WPA and other agencies to make valuable contributions to the facilities of the Garden—e.g. the integrated *Index kewensis*.

In October 1935 Merrill accepted a position as Professor of Botany and Administrator of Botanical Collections at Harvard University. He became Arnold Professor in 1936 and Director of the Arnold Arboretum in 1937 (having previously held the title of Supervisor). In this position he remained until his retirement on 31 July 1946. He died, after a long illness, on 25 February 1956.

Such a man obviously has broad interests, with the energy which makes them productive. Merrill's many achievements include a distinguished editorial career. He edited the *Philippine Journal of Science* for nineteen years. He established *Hilgardia* in 1925 and edited it for several years. He founded *Brittonia* in 1931, *Arnoldia* in 1941, and *Sargentia* in 1942 (the two last being, to be sure, merely new names for existing serials). He was responsible for the *International Address Book of Botanists* published in 1930-31. While he was at Harvard he published a series of facsimiles of rare botanical classics, such as Walter's *Flora caroliniana*, Gronovius' *Flora virginica*, and several of Rafinesque's works.

During the years spent in the Philippines he established himself as an authority on the Malaysian flora, discovered many new species, and published an impressive series of taxonomic contributions. The flora is a rich one—estimated at 45,000 species of vascular plants alone; and this achievement bears witness to the keen critical sense and acquaintance with plants as they grow which alone could make it possible. The herbarium built up under his direction at Manila numbered three hundred thousand specimens. Such work inevitably brought him into touch with herbaria and taxonomists all over the world. It also led him into a distinguished series of essays on plant distribution, and into historical and bibliographic work. Among his more than five hundred published papers are writings on the origin of the coconut palm, on the relation of primitive man to cultivation; on Rumphius, Osbeck, Blanco, Burmann, Loureiro, Houttyn, Amos Eaton, Rafinesque. His bibliographic industry bore fruit in the great *Bibliography of Eastern Asiatic Botany*, published in 1938 in collaboration with Egbert Hamilton Walker of the Smithsonian Institution; and in the *Index Rafinesquianus* of 1949.

His wide knowledge and personal capacity were recognized in his appointment as one of the Presidents of the Section of Taxonomy and Nomenclature of the Sixth International Botanical Congress at Amsterdam in 1935, and again in the Seventh at Stockholm

(Continued on page 90)

PLANTS CANNOT THINK

By James F. Ferry

FREQUENTLY we read or hear it said that "plants send their roots deeper into the soil to obtain moisture;" that plants placed in a darkened room will "bend toward the window in order to get more light;" that plant seedlings in the dark will "grow long in search of light;" that certain plants "produce thorns to keep animals from eating their leaves;" or that plants "develop fruits so as to provide food for animals."

Many people try to explain what plants do as though plants have brains and, therefore, are able to figure out what is best for themselves. Such explanations imply that plants can direct their activities so as to accomplish the purpose or purposes which they have reasoned out to be most beneficial. This, of course, is not true. Suffice it to say no one has ever demonstrated that plants possess mental processes and are capable of performing acts of intelligence. Giving plants credit for thinking is as foolish as saying that water runs down hill so as to get to the sea, or that it rains occasionally in order to give plants a drink.

If, then, plants do not have reasoning power, you ask: Why *do* roots grow deeper into the soil? Why *do* plants bend toward the window? Why *do* seedlings in the dark grow longer than the same kind of seedlings in the light? Why *do* some plants produce thorns? Why *do* plants develop fruits?

Man seems always to have felt an urge to account for his surroundings. Naturally, he tried to explain what goes on around him in terms of that with which he was most familiar—himself. Thus, it was easy for him to believe that plants do things for a purpose. It was not until he began to study critically the processes of nature and to perceive the effects of one process upon another, that a scientific approach to correct interpretation of plant activities was made. The myths that had grown up about plants had to be replaced by facts. However, in interpreting the living plant world from the standpoint of cause and effect, progress has been comparatively slow. Personification, that is, crediting plants with human qualities, is still chosen by many as the basis for explaining the activities of plants. Only the more thoughtful students are skeptical of interpretations that ascribe conscious effort to all sorts of plant activities. Slowly during the last century, and much more rapidly during the present one, scientists have paved the way for a more intelligent understanding of nature. The work of all our plant science research institutions is directed toward the discovery of facts and to the understanding of the interdependence of biological processes. Perhaps one of the greatest needs today is that the average citizen should become as intelligently conscious of the advances which have been made in the scientific interpretation of his biological environment as he is of the advances in his physical and chemical world.

The correct interpretation of what plants do requires that each activity be carefully analyzed on the basis of cause and effect. That means we must bring to bear on each problem all related facts which have stood the test of time. Even then the available information may not be sufficient, and we must search (or research) for more. But we shall never get the correct answers if we dismiss what plants do by simply saying that these are the things that plants want to do or believe they should do. What is more, the continuous and successful production of plants on a practical scale will be determined in a large measure by the extent to which careful application is made of the basic facts which we have to facilitate the growth of plants. Needless to say we are aware that the acquiring and successful application of knowledge takes years of hard work, study, and experience. We are all constantly confronted with new problems that tax our "know-how." But by way of illustration, let us review a few fundamental facts and then put these to work in explaining some problems.

First, we should recall that what a plant is and what it does depends chiefly upon two things — heredity and environment, that is, both conditions within and outside the plant which influence the plant's activity. Heredity determines the species or variety of a plant, and there is not much of a practical nature which one can do about the hereditary make-up of a plant unless he is a skilled plant breeder. It should be pointed out, however, that the scientific selection and breeding of plants have provided us with many varieties which are hardier, more disease resistant, or in other ways better suited for our needs. Mutations do occur occasionally in nature or can be brought about artificially by X-rays and other means, but these are rarely beneficial and the ordinary plant grower cannot depend upon them. On the other hand, much can be done to direct plant activities through the control or modification of the environment.

Secondly, let us not lose sight of the fact that although plants do not have brains, they are definitely living, dynamic entities capable of many remarkable processes; that each multicellular plant is made up of numerous structural and functional units called cells, most of which are smaller than the dot we can make with our pencil; that within each tiny living cell there is a minute droplet of living matter called protoplasm; and that this protoplasm is extremely sensitive, is exceedingly complex, and is constantly changing in structure and function as conditions within and without the cell or plant change.

Thirdly, we need to recognize that plants do not get their food from the air or soil or water, rather plants obtain minerals and carbon dioxide and water from the environment, and these are combined within the plant in the making of food; that only plants which contain chlorophyll (except a few bacteria) can make sugar; that the first stable food made by chlorophyll-containing plants is sugar; that sugar is necessary for the making of all other foods such as starches, fats, and proteins —the synthesis of the latter requiring also nitrates, sulfates, and in some cases phosphates in addition to sugar; and that other organic substances in plants like vitamins, enzymes, hormones, cellulose, latex, resins, and gums, are likewise made within the plants.

Finally, we need to remember that

protoplasm is made up largely of water and proteins, and therefore an adequate supply of both sugar and minerals must be available if cells are to divide and form new cells, if new protoplasm is to be made, or, in other words, if growth is to occur.

Now quickly summarizing these facts, we see (1) that heredity determines the species and/or variety of a plant; (2) that both conditions within and outside of plants can greatly influence the activities of plants; (3) that plants are dynamic organisms containing living protoplasm which is very sensitive to changing conditions; (4) that the only living things of importance that can make sugar are plants which contain chlorophyll, and that sugar is made from carbon dioxide which is obtained from the air and water from the soil; and (5) that an adequate supply of sugar, water, growth substances, and minerals is required for the growth of a plant or any of its parts.

With these facts in mind and a few others that we shall bring out, let us try to explain briefly the answers to some of the questions which we raised earlier in this discussion. First, do "plants send their roots deeper into the soil to obtain moisture?" From what has already been pointed out, it is clear that plants do not have brains, and therefore they have no way of knowing that there is moisture deeper in the soil. Consequently, plants do not *send* their roots deeper into the soil to obtain moisture. To answer this question correctly, we must keep at least three facts in mind. First, roots grow in length only at their tips; second, in addition to food, minerals, enzymes, and growth substances, a constant and adequate supply of water is necessary for growth; and third, water molecules move from an area of greater concentration to a place of lesser concentration. Now putting these things together, we see that as long as the available water is greater in the soil than in the root tips, water will move from the soil into the root tips, and if other conditions are favorable, the root tips will continue to grow in length (deeper). On the other hand, if the soil around the root tips becomes too dry (even though there is moist soil below), the water will move out of the root tips into the soil; hence the amount of water in the root tips is reduced, growth stops, and the root tips cease elongating.

Let us now take a look at the second question, namely, do plants placed in a darkened room "bend toward the window in order to get more light?" Again the answer is no. A commonly accepted explanation of what happens here is this. In the growing stem tip there is produced minute quantities of a very potent growth substance called auxin. This auxin moves backwards from the stem tip and greatly influences growth. Once more in getting our answer we must recognize certain facts. First, the right amount of auxin is required to stimulate growth; second, auxin exerts its greatest effect on growth just back of the stem tip (in the region where cells elongate); and third, auxin is very sensitive to both internal and external conditions including light. Hence, the auxin on the window side (the more brightly lighted side) is inactivated by the brighter light and, as a result, auxin does not stimulate growth on that side. On the room side (the darker side) the auxin is not inactivated, and hence growth is stimulated on that side. This produces a growth pressure on the darker side, which causes the stem tip to bend until it points toward the window. When the stem tip assumes this position (horizontal to the floor), the stem tip will be lighted equally on all sides; thus the auxin will influence growth equally on all sides, and the stem will continue to grow toward the window.

That stems grow longer in the dark than in the light may be attributed to somewhat the same phenomena, although in this case water also is believed to play an important role.

Furthermore, some plants produce thorns, flowers, fruits, and seeds because of the inherent metabolic activities of these plants and not because the plants decide they need thorns for protection, or flowers to attract insects or please people, or fruits or seeds to feed animals. All these and other plant activities are the result of cause and effect, although most of them are much more complicated than the simple explanations given here indicate.

Therefore, it should be reemphasized that plants do not have brains, are not able to figure things out for themselves, and, consequently, cannot voluntarily direct their activities so as to accomplish purposes. In short, plants cannot think!

TWO SPRING SHOWS

By Dorothy Ebel Hansell

The Philadelphia Flower Show

"Smell it!" "Feel it!" "You know you're in a flower show even before you've actually seen it." "There's something about the Philadelphia Show that is—all flower show." We had hardly passed through the side entrance of the Commercial Museum before these exclamatory remarks were being made. It is true — the twenty-ninth annual Philadelphia flower show — all four acres of it — was a flower show in every sense of the word. Spectacular, beautiful, yet presenting practical, down-to-earth ideas for the city, suburban, and country gardener, and helpful hints to the flower arranger.

We entered the building right where the table arrangements were staged — the theme, "In the Period of the Presidents." Tables were set in the periods of Presidents Dwight D. Eisenhower, Franklin Delano Roosevelt, James Madison, Abraham Lincoln, and others. The Lincoln table, carefully executed to every last detail and with an exquisite arrangement of roses, won the top honors. The line of spectators moved slowly here and in front of the flower arrangement classes, "Clipper Ship," "Cracker Barrel Days," "Gold Dust." In fact it didn't move at all in front of the last class, for the judges had not completed their task.

We broke away to view the six landscaped approaches to front doors and adjoining entrance halls, fully furnished and decorated with appropriate artistic arrangements. This was part of the special section of the Pennsylvania Horticultural Society in which eight of the Philadelphia area garden clubs participated. All six offered valuable suggestions, but the Colonial and the contemporary in its simplicity of design and selection of plant material were outstanding.

A cheerful breakfast room caught our eyes. One window was marked "sun," the other "no sun," and the plants on the glass shelves and in hanging containers had been chosen to fit these two exposures. This was the work of Ernesta Ballard, a graduate of the School of Horticulture at Ambler, Pa., and it

was judged the finest in the show. Several years ago Mrs. Ballard acquired the greenhouse adjacent to her home property in Chestnut Hill and began to collect unusual house plants—her efforts brought her this meritorious award.

On each side of Dogwood Avenue—the center aisle, three hundred and more feet long, down which dogwoods were lavishly planted — were examples of city, suburban, and country gardens, culminating in a three thousand square foot area representing "Spring along the Wissahickon." Ferns, skunk cabbages, trilliums, blood-root, violets, columbines and a host of other wildlings, rocks and rills, dogwoods, birch, and azaleas had been artfully combined into a natural scene by Vicks Wild Flower Garden.

One of the most delightful and functional of the four urban yards was made by Harry Wood of the Arthur Hoyt Scott Horticultural Foundation at Swarthmore College. It was a flagstone outdoor room, approximately twenty feet square, enclosed within a wooden fence, painted a soft grey-green. The fence was an effective foil for the pink flowering crab and rhododendrons, and the slightly raised border of primroses, forget-me-nots, arabis, and other early spring flowers. No grass—for a lawn is a nuisance in the city, according to Mr. Wood; and we're inclined to agree with him.

Convinced that the city dweller wants something pleasing to look at in winter as in summer, Allan Davis of the Davis Nursery selected various hollies for his urban garden, highlighting them with azaleas for spring color.

The suburban gardens on Dogwood Avenue were designed and planted by several nurseries—Albrecht, Rose Valley, Styer, and DeKalb—and featured dogwood, flowering crabs and cherries, azaleas, spring bulbs. In the DeKalb Nurseries garden, the lavender panicles of wisteria lightened the dark brown wood of the pagoda; a lilac bush was also in full bloom and a big honey locust in leaf.

DeKalb Nurseries was founded by the late Adolph Muller who received the Johnny Appleseed Award of the Men's Garden Club of America for his interest in promoting the dogwood. Mr. Muller gave thousands of dogwood saplings to school children to plant in their home gardens. He started the Montgomery County Dogwood Association which spread to the counties of Berks, Buck, and Chester. It was immensely gratifying to Eugene Muller, who carries on the nursery, that the tree his father cherished was used so prominently in the Philadelphia show.

The National Agricultural College at Doylestown, and Millcreek Nurseries of Newark, Delaware, were responsible for the country gardens. For the first, landscape architect Frederic Bleau designed a flagstone picnic area alongside a weathered barn and, of course, a large barbecue. In Millcreek Nursery's exhibit, a rustic "snake" fence, once very popular in Delaware, separated a cultivated lawn from the adjoining uncultivated land. The carefully selected plant material for both the cultivated and uncultivated areas gave the whole a very realistic atmosphere.

Along other aisles, we came upon more gardens — formal and informal. We all agreed we should be quite content to spend a June afternoon on the terrace of Conard-Pyle's formal rose garden, fragrant with the odor of the luscious roses and cooled by the water of the long blue pool. It was so outstanding as to win the Governor's trophy. And we should enjoy roaming through the lovely woodland scene, created by the National Association of Gardeners, Philadelphia Branch. Primroses in variety were featured in a natural setting with rocks and tumbling brook, dogwood, birch, azaleas, and a huge gnarled tree stump. This garden was skillfully and artistically put together.

We admired the fine azaleas displayed in a spring garden that reflected great credit on the Horticulture Club of Pennsylvania State University; and the little corner garden, designed by Carolyn Whitenack and filled with three of Burpee's new marigolds, 'Nearest to White,' 'Yellow Pygmy,' and 'Tangerine.' Eleven by fifteen feet in all, with weathered picket fence and evergreens as background, a curving tan bark path leading to the raised flower bed, this low cost garden could easily be duplicated on small home grounds.

We turned into another broad aisle and gazed upon a wealth of orchids, thirty-five hundred square feet of dazzling exotic blooms. Plants and cut flowers from private and commercial growers were combined into a spectacular show within a show. There were tropical rain forest, a jungle garden, a modern living room with orchid arrangements in the large picture window and on desk and tables. Never have we seen such large and perfectly formed

The exhibit of annuals by The New York Botanical Garden at the International Flower Show received the Bulkley Award of the Garden Club of America. The demonstration on propagation, on the right side, is not visible.

pure white phalaenopsis as those on a plant exhibited by George Widener.

Another show within a show — the commerical exhibits around which visitors thronged to buy Burpee's or Lohrman's or Michell's seeds, Fischers' African violets, Sheiper's orchid plants, and Milton Arndt's geraniums, tiny cacti and succulents and his novelty begonia 'Cleopatra.' The leaves of the latter are a Nile green with translucent patches through which are visible the rust and red colorings on the underside; the flowers, a pastel pink, are delicately perfumed in the morning.

The professional gardener's cultural technique was in evidence in one section where magnificent potted tulips, hyacinths, cyclamen, azaleas, *Primula malacoides* and *obconica,* freesias, and cut flowers of stocks, snapdragons, delphiniums, lupines, ranunculus, and others too numerous to mention were entered in keen competition. And Earle Dilatush's collection of hollies, including heavily berried, twenty-five foot high specimens, was a sight worth traveling a distance to see.

Horticulturally speaking, the Philadelphia Show is still going strong!

The International Flower Show

We wish we could write as enthusiastically about the New York show as we have about the Philadelphia show; we should like to be able to say that the shows were on a par, or even that the New York Show had a slight edge on the show in the "City of Brotherly Love." But, unfortunately, the 39th International Flower Show did not measure up to some of its predecessors nor to the 29th annual Philadelphia flower show in number and variety of gardens, in quantity and quality of plant material. Certainly, the number of entries and the quality of material in the professional gardeners' classes at the International Flower Show did not equal the professional gardeners' section at the Philadelphia show; neither was the quantity nor variety of orchids as impressive.

There were interesting exhibits and well-grown plants, to be sure; but taking the International Flower Show as a whole, it lacked that certain something which causes spectators to exclaim, "What a fabulous flower show!"

We all recognize the fact that in staging a flower show on three floors, the Show Committee encounters many problems. And with this International Flower Show, problems more or less piled up. It was August before the former John Wanamaker store was obtained as show headquarters. Instead of the usual twelve months—for preparation of the next show begins right at the close of the current show — the Show Committee had only seven months. We have been so closely identified with the International Flower Show, in one way or another, for so many years, that we experience a feeling of sadness in not being able to sing its praises wholeheartedly. Perhaps its fortieth anniversary next year will be a noteworthy event with many individual exhibits of quality material skillfully coordinated to present a glorious floral spectacle.

What were some of the good things at the International Flower Show? The top-quality tulips grown and placed by James Jack with a nice appreciation of color balance, in the formal garden exhibited by his employers, Mr. and Mrs. J. G. De Fina of Rye, N. Y. The beds of tulips, separated by gravel paths and accented with evergreens, made a formal garden of geometric pattern; it received the silver trophy of the Horticultural Society of New York.

The magnificent spires of delphiniums towering against the rear wall in the nicely proportioned formal garden of Brookside Nurseries, winner of the Charles H. Totty Memorial Trophy and the New York Florists' Club Trophy.

The fine specimen of *Malus atrosanguinea* successfully forced into full bloom in the southern garden exhibited by Daybreak Nurseries. The winner of the gold medal of the Massachusetts Horticultural Society, this garden contained some nicely flowered *Camellia Sasanqua* varieties and *Cytisus racemosus.* It also received a special citation for outstanding skill in the effective use of pavement in a garden.

The ingenious handling of awkward floor space by the North Shore Horticultural Society. The members of this organization contrived a two-level garden with a background planting of evergreens and dogwood. Azaleas were featured on the upper level, while on the lower level the curved beds of fine tulips were edged with dwarf Japanese holly. This garden received the William Robertson Coe trophy.

The natural woodland garden created by Towpath Gardens of West Hartford, Conn., around a grist mill—and especially the native plant material which had been so carefully forced into bloom in time for the show. Ferns in variety, trilliums in variety, blood-root, blue marsh violets, and columbines were seen growing beneath mountain-laurel, native azaleas, birch, and dogwood along the millstream. A large clump of golden daffodils gave a touch of bright color to the weathered wood of the mill and slowly turning mill wheel. Towpath Gardens was awarded the Lambertus C. Bobbink Memorial Trophy.

Thomas Flower Mart of Syosset, L.I., introduced an original note — an autumn garden. Beds of colorful chrysanthemums were separated by gravel paths with background planting of birch trees and yews and a woven fence against which pyracantha had been espalier-trained. This was the first time chrysanthemums have been seen at New York's spring show.

Jackson & Perkins' rose garden, designed by landscape architect Armand R. Tibbets to provide a setting for the introduction of new floribunda roses 'Spartan,' 'Golden Fleece,' and 'Amy Vanderbilt,' was awarded the Frank H. Traendly trophy for an outstanding rose garden and excellent rose culture. 'Amy Vanderbilt' is a lilac-lavender, a color that does not appeal to us in a rose, but which, we must admit, was effectively employed in combination with the floribunda 'Baby Blaze' in this rose garden of classical design. Well-grown standards were strategically placed for height and contrast. This exhibitor and McCalls' Magazine cooperated in the Betsy McCall Rose Garden for children. Designed by landscape architect Henry Aul, it provided play area as well as room for growing the new floribunda 'Betsy McCall,' hybridized by Eugene S. Boerner, director of plant research of Jackson & Perkins.

Mr. and Mrs. Nils Hogner—Mrs. Hogner is author of *Herbs From Garden to Table*—of Hemlock Hill Herb Farm, Litchfield, Conn., designed the simple but charming kitchen garden which won a special silver trophy for the New York Herb Unit, Inc., of The Herb Society of America. Right next

to the kitchen, so the home maker could gather herbs conveniently whenever she wanted them, was a little kitchen garden. Growing in it were rose geranium, pineapple sage, spearmint, salad burnet, thyme, tarragon, oregano, hyssop, and loverage. The kitchen window box was filled with chives and parsley, and just inside the window were healthy chervil and dill. On the porch to the left of the kitchen door were pots of rosemary and sweet basil; on the table all the ingredients — greens, tomatoes, herbs, vinegar — for a delicious salad.

The Brooklyn Botanical Garden showed the average gardener how he could enjoy a "home fragrance garden" and distributed a list of fragrant annuals, herbaceous perennials, bulbs, and shrubs. Herbs, too, are appropriate for a fragrant garden, as many possess a pleasing odor. The "Garden of Fragrance" constructed in 1955 at the Brooklyn Botanic Garden has already given pleasure to many blind people who "see" the plants with their sense of smell and touch.

The Men's Garden Club was responsible for a comprehensive exhibit — propagation by polyethylene, mist watering, garden lighting, mulching. There was an interesting demonstration on the propagation of African violets—starting with a leaf planted in vermiculite and advancing, step by step, to mature plants; and another demonstration of Henry Teuscher's recommendation to "grow everything in sphagnum with soluble fertilizer." Mr. Teuscher, now director of the Montreal Botanical Garden, was formerly associated with The New York Botanical Garden.

The New York Botanical Garden received the coveted Bulkley Medal of the Garden Club of America for its display of annuals. More than thirty-five different annuals were brought into bloom and arranged in a border against a basket-weave fence and a background planting of birch, flowering cherries, yews, and Japanese hollies. The exhibit included information on and demonstration of the various steps in raising annuals from seed.

Cornell University received the T.A. Weston Memorial Trophy for its educational exhibit on growing chrysanthemums in the garden and forcing them into bloom between December and March by artificial lighting.

These educational exhibits by Cornell, The New York Botanical Garden, the Brooklyn Botanic Garden, the Men's Garden Club, and the holly exhibit set up by Mrs. Alfred B. Thacher of South Orange, N. J., and Mrs. Leighton F. Meserve of "Holly-by-Golly," St. James, L.I., attracted the men. As one man said to us, "These exhibits really have meat; they demonstrate practical know-how—all-important in this day of 'do-it-yourself'." Mrs. Thacher and Mrs. Meserve were awarded a gold medal certificate for their exhibit of fifty plants, representing nineteen species of hollies.

A gold medal certificate was also presented to Miss Evelyn Collins Hill for a non-competitive collection of flowering material, chiefly camellias, picked from the gardens of her home in Lynnhaven, Virginia. The plant material was picked Friday night, packed on Saturday; Miss Hill brought it with her on the train from Norfolk Saturday night and at seven o'clock Sunday morning was in John Wanamaker's store getting it ready for the opening of the flower show. And Miss Hill was the recipient of a gold medal award from the Nanisemond River Garden Club (member club of the Garden Club of America) for the camellia exhibit she arranged for its show just two days before coming to New York.

The demonstration by several member clubs—Rumson, Rye, Philipstown, Green Fingers, Orange and Dutchess, of the Garden Club of America — on "How to Plant the Grounds of a Ranch-type House" offered many good ideas to new home owners — and detailed information was available, including costs, on the foundation planting, doorway planting, raised bed planting, and the triangle planting around the lamp post. Similar information was furnished on the setup and planting of the disposal unit.

There was stimulating competition each day in the flower arrangement classes, with the highest award, the Fenwick medal, "in recognition of creative work for outstanding beauty in the use and arrangement of growing or cut plant material" being presented to Mrs. Donald L. Cleveland of the Green Fingers Garden Club. Mrs. Cleveland arranged cypripedium and phalaenopsis flowers with cattleya leaves in a Chinese ceramic container of classic design.

The Federated Garden Clubs of New York State, Inc., also had competitive classes in flower arrangement each day of the International Flower Show and special arrangements in the adjacent Coty's exhibit. Their Junior section was most commendable.

Several of "The Village" (the section of New York City where the Wanamaker store is located) organizations participated in the show. Grace Church entered a facsimile of its outdoor altar "designed for worship and meditation, planned for ease of upkeep." The noted landscape architect, Mary Deputy Cattell, planned the exhibit which featured a garden chapel with a simple altar banked by hemlock, spruce, dogwood, white lilac, white azaleas, and Japanese holly. The Gramercy Park Association reproduced the garden and sitting room of Peter Cooper, founder of Cooper Union. His ninety-one year old grandson, Edward Ringwood Hewitt, who knew the garden and house in his youth, was able to advise the exhibit's designer, Miss Anne Hodgkins. One looked through a window into the sitting room furnished with authentic pieces of the period. The Little Gardens Club of Greenwich Village displayed attractive window boxes for city homes and apartments, together with step-by-step procedure on how to plant them, and furnished advice on planning and building backyard and roof gardens.

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THE NEW YORK BOTANICAL GARDEN

Bronx Park, New York 58, N. Y.

MERRILL (from page 84)

in 1950. He was President of the New England Botanical Club in 1937-39, of the Botanical Society of America in 1934, of the American Society of Plant Taxonomists in 1946. Besides these he was a member of the A.A.A.S., the American Academy of Arts and Sciences, the Torrey Botanical Club, the Philadelphia Academy of Natural Sciences, the American Philosophic Society, the National Academy of Sciences, the Deutsche Botanische Gesellschaft, the Société Botanique de France, Svenska Vetenskaps Akademien, The Royal Horticultural Society, the Linnean Society of London, The Edinburgh Botanical Society, the Royal Society of Edinburgh, the Malayan Branch of the Royal Asiatic Society, the Nederlandsche Botanische Vereeniging, and the Japanese Botanical Society.

Merrill was honored on 22 February 1939 by a gold medal of the Ministry for Agriculture of France, with a diploma of the Société Nationale d'Acclimatation. On 24 May 1939 he received the medal of the Linnean Society of London—the first American botanist to be so distinguished. He was awarded the Geoffroy St.-Hilaire medal in Paris on 7 May 1950; and the Distinguished Service Award of The New York Botanical Garden on 15 May 1952. Not the least of his honors was the publication in 1946 by the Chronica Botanica Company of a volume of his writings, entitled *Merrilleana*. In 1952 he received a Guggenheim followship for the study of the Indo-Malaysian and Philippine flora. He was a member of Phi Beta Kappa, Sigma Xi, Phi Kappa Sigma, and Alpha Zeta honorary and professional fraternities.

During the second World War Merrill was Special Consultant to the Secretary of War, and published a manual for the armed services on *Plant Life of the Pacific World*.

An extensive collection of his specimens from eastern Asia and Indonesia came with Merrill to the Garden in 1930, and form a permanent part of the herbarium. Recently we received also his personal library of bound books and pamphlets. Many of these are rare, and Merrill's copies are especially valuable for his marginal notes. Works duplicated by volumes already in the library are being sold; the proceeds, under the terms of the gift, will be used to establish the Elmer D. Merrill medal, and a fund for the official publications of the Garden.

I knew Dr. Merrill only during recent years, when he was already close to retirement, or retired. He was at least equally well known to most American taxonomists, and to many abroad. We shall all remember his short wiry figure, his owlish spectacles surmounted by heavy brows, the decisive line of his mouth, the persistent tang of his down-East speech; above all his drive and incisiveness. He made up his mind quickly and did not often have to change it. Withal he was humorous and friendly: he may have made enemies — few administrators do not—but he had a host of friends. Even if he disagreed with you most emphatically—as he did sometimes with me — you would not take offense. Everything was in the spirit of the game and without any obvious appeal to the authority of his overwhelming experience.

It is probable that in the coming years errors will be found in Merrill's determinations of plants, and that botanists of the future will disagree with some of his phytogeographic conclusions. No one can produce such a volume of work and be always right. That does not matter. The immense stimulation of his life and work is what counts. We have lost another of the great botanists of our time.

FOR THE YOUNGER GENERATION OF GARDENERS

•

Grandpa's Story

ONE EVENING, while sitting by the fireplace in my favorite "rocker," enjoying the heat and watching the flames leap and change color as they roared up the chimney, I became drowsy. Once again I was reliving the happiest days of my boyhood, when I roamed the wooded shores of the Bronx River in what is now The New York Botanical Garden. I was remembering frosty mornings spent in fields covered with hoar frost and my favorite chestnut tree, a giant eighty to one hundred feet high, three feet in diameter, and bearing the biggest, sweetest chestnuts to be found anywhere. I was hearing the nuts rattling through the leaves like hail hitting a tin roof, as I shot up my sling to knock them down.

I was aroused from my pleasant recollections when my two grandchildren knocked at the door, calling, "Hey Grandpa, wake up and let us in. We want a story."

"A story? What kind of story?"

"We want a story about the time you were a boy and lived in New York City, about the park where you took us once. Tell us how you took Daddy there to teach him about birds and trees. Start right from the beginning, Grandpa—about the school that took all you children to this park on natural history trips."

So I told them the story which follows:—

I was graduated from grade school when I was twelve years old. Pretty nearly all boys at that age went to work in those days—many even younger. Your great grandmother had different ideas—she wanted me to continue going to school—so I enrolled in what was called the "Workingman's School" on 54th Street in New York City. It was a new kind of school because it taught a lot of things no other school taught—clay modeling, carpentry, drawing and natural history, which was one of my favorite subjects. Maybe if I had not attended this school, I would not have had all those good times in the park, and now I would not have this story to tell you.

I used to hear the boys and girls talking about a trip they made every year to a place in the Bronx, about the fun they had there, and all the things they brought home in baskets—flowers, stones, snakes, turtles. When April came around, the boys and girls in Mr. Kelly's natural history class clamored, "Mr. Kelly! Mr. Kelly! When are we going to the Bronx?" One day he said, "Attention, class. Next Saturday morning we shall meet in front of the school at nine o'clock; bring lunch, carfare, and a basket for your specimens."

I was one of the first to get to school. I had a big lunch and a big basket. Off we all started for the elevated train on Third Avenue. The noise we made

sounded like the chattering of a thousand bluejays. "All out," shouted the conductor at the end of the line, and out we rushed.

The Bronx River, where we entered the Park, was more like a lake because there was a big dam holding the river back. There were boats for hire. In the winter we skated on the River, when it froze over, and men cut the ice to use in ice boxes. We didn't have electric refrigerators in those days.

Pretty soon I heard some of the boys exclaiming. "Look! Jack-in-the-pulpit, windflowers, dogtooth violets, Canada mayflowers." They were mentioning names I didn't know, for the only flowers I knew were the ones my father had in window boxes.

One of the boys pointed to a plant growing in a rocky place and said, "Willie, there's a rare plant. Why don't you take it home?" I picked it and ouch! I got my fingers full of splinters that felt like thin wire. I never forgot the name of that plant—prickly pear! The flower I liked best of all we found that day was a columbine; one of the boys told me its name. Ever since then it has been my favorite flower.

Across from us, on the other side of the Bronx River, stood an old dilapidated stone building. It used to be a snuff mill.

Joanie interrupted, "Grandpa, isn't that the place where you took us for lunch the day we visited The New York Botanical Garden?"

"Right, you are Joanie."

Just above the mill we had to climb to the top of the bank, because the rocks were like walls with the water rushing between them. Mr. Kelly told us this spot was called the Gorge.

The Bronx River is the only real river in New York City—the others are arms of the sea. The falls at 177th Street act as a barrier to the sea. If you look sharp, you can still find where the dam was built that stored the water to run the mill; you'll find it just below the dam that is still in existence.

The girls reached the Hemlock Forest before we boys did. Well, the Forest was really something to see—such big evergreen trees. Some must have been hundreds of years old. In places where the sun could shine through the branches, it made us think of the sun shining through church windows; and where the trees had a lane between them, it made us think of the tall columns that hold up the church roof.

Around the base of one tree we found funny-looking pieces—they looked like something wrapped in felt. Those, Mr. Kelly told us, were owl pellets. The owl swallows as much of his food whole as he can. Yes, bones, hair, fur, feathers, all at once! The flesh is digested and the bones, fur, feathers, or hair retained in his stomach are wrapped in this felt-like coating and vomited.

There were a number of different birds, of which I knew a few—robins, flickers, and goldfinch. One of the boys who knew a lot about birds said that the warblers would soon pass through the Forest on their way to nesting grounds. Some of them would stay in the Hemlock Forest to build their nests and raise their families. Some would fly five hundred or even a thousand miles farther.

As we walked along, we came to a great rock. Mr. Kelly said it had been put there during the Ice Age. This part of the country was buried beneath ice for thousands and thousands of years, and when the ice began to thaw, it carried these great boulders along. Mr. Kelly told us that Long Island, one hundred twenty-six miles of it, was deposited by the Ice Sheet.

While we were still in the Hemlock Forest, about one hundred feet off the path we spied some holes in the rock that looked as though some giant had tried to make a pot out of stone. Again, Mr. Kelly explained what had happened to cause the odd formation. When the Ice Sheet started to move, it ground stones and sand around and around like flour is ground in a mill. Of course, if we had to wait for flour to be ground fine enough as long as it took to grind out the hole, we would surely starve to death. We noticed a tree growing out of one of the pot holes.

Another short walk and we arrived at the spot where two ponds were separated by a narrow path. Perched on the limb of a tree we saw a large bird, blue on the back, white underneath, and reddish band across his breast. His bill was pointed. Up spoke a bespectacled boy we called "Professor." In his best classroom recitation manner, he gave us a lecture. "The bird you see perched on the tree limb is a belted kingfisher. If you will wait patiently, you will see how he obtains his food."

Sure enough! The bird must have been a fish, he didn't dive, he just dropped flat on the water, went under, and came up carrying a fish crosswise in his bill. "Watch carefully," continued the "Professor," "the bird is gradually working the fish around to bring it head first in his bill. This enables him to swallow the fish without having the fins prevent him from doing so. Simple, isn't it?"

Next we reached a wooden bridge, and we could see ducks swimming up and down the River. Mr. Kelly told us they were mallards, black ducks, pintails, and wood ducks. The wood duck is the most beautiful, one of the handsomest birds in the United States. It makes its nest and also roosts in trees. Some people say that the young when hatched flutter down like falling leaves; others say the mother brings them down to the water in her bill; and still others say she carries them down on her back.

Along side the bridge was a swampy spot. Off came shoes and stockings and in we went to look for turtles, water snakes, frogs, anything we could catch. Farther out, in a small channel through the swamp in some fairly fast water, we turned over stones and found cray fish for our school fish tank.

All that I have told you is still to be seen at The New York Botanical Garden and many more things than when I was a boy—the Rose Garden with its thousands of rose bushes; the Conservatory with plants from many parts of the world; special flower exhibitions like the Chrysanthemum Show, the Christmas Show, the Easter Show; a museum that has thousands upon thousands of dried plant specimens; a library that has thousands of books about plants; and a big meadow where children can run and play.

"That's a great story, Grandpa," said my young grandson. "I'm going to ask teacher to hire a bus and take our class there. I'm going to tell Mommy to take it up at the P.T.A. meeting and have the school take all the children."

"That's a wonderful idea. Now, you two, get started on your way home, and don't dream you're sliding down Boulder Rock or falling into the Bronx River."

WILLIAM F. DRESCHER

BOOK REVIEWS

NATURE'S WONDERS. Charles L. Sherman. Introduction by Robert S. Lemmon. 252 pages, illustrated in color; indexed. Hanover House, Garden City, N. Y. 1956. $7.50

Through the Audubon Nature Program launched by the National Audubon Society and Nelson Doubleday, Inc., 48-page pamphlets accompanied by sheets of full-color stamps are distributed. Once in their places in the pamphlet, the stamps and text form a unit. However, there is a degree of impermanence with these, so Mr. Sherman has functioned as an editorial catalyst to put fourteen individual units in this series together in a book. Leading writers in the field of nature are responsible for the units, and the color photographs have been gathered from many nature photographers. These the editor brings deftly together in one of the most colorful of nature books.

Each chapter stands by itself, the first having been written by the late Alan Devoe and entitled "Animal Children." Other chapters cover seeds and seed pods, eyes of nature, best loved song birds, life in a woodland pond, favorite wild flowers, butterflies and moths, life in the Everglades, camouflage in nature, nature's architects, flowering trees and shrubs, inventions in nature, life in shallow sea water, and birds of prey. The text is readable and interesting throughout and the color reproduction quite a triumph, particularly when one considers the variety of subjects and the number of different photographers involved.

RICHARD W. WESTWOOD, *Editor*
Nature Magazine

WHAT FLOWERING TREE IS THAT? Edwin A. Menninger. 106 pages, illustrated, indexed. Published by the author at Stuart, Florida. 1956. $3

The visitor to South Florida, particularly to the Miami region, is surrounded by unfamiliar trees, shrubs, and flowers. These have been introduced from every part of the tropical world, and identification is correspondingly difficult. A large botanical library would be necessary. The use of Menninger's books for aid in identification is recommended, although only in conjunction with other works, such as Macmillan and Neal. All of these, by the way, are for sale by Mr. Menninger or may be obtained through Book Service of The New York Botanical Garden. This beautiful little book is the result of years of experience by its author in introducing into south Florida new kinds of flowering trees and shrubs which will grow there. No other plant dealer supplies the rare species obtainable from him. *What Flowering Tree is That?* describes non-technically seven hundred and fifty-nine tropical species, by my count, arranged in eighty-one plant families. The listing is by common name, for example, red silk cotton, followed by the botanical name, *Bombax Malabaricum*, in parentheses. Many have no common name.

About one quarter of the species are accompanied by a photo. This is an especially valuable feature of the book, such photo collections being difficult to obtain. There are one hundred and seventy-four black and white photographs, each about two and a half by three inches, one black and white full page, and four beautiful full-page color photographs. The photographs are of those species most likely to be encountered. At least half of the trees listed are rarities.

The descriptions are made in an agreeable, spirited style, with copious quotations from standard reference books on the botany of the country from which the tree originated. For example, over one and a half pages are devoted to the padauks *(Pterocarpus)* with quotations from Nehrling, Macmillan, and Corner. Thus, the book becomes an introduction to the literature of tropical botany and horticulture and is of use to two classes of persons—those wishing to identify tropical flowering trees in south Florida, and those wishing to beautify the Florida scene by planting new varieties. A separate price list of plants and horticultural books accompanies the handbook.

R. B. KURTZ
New York City

THE ILLUSTRATED REFERENCE ON CACTI AND OTHER SUCCULENTS. Edgar Lamb. 311 pages, illustrated in color and black and white; indexed. Pitman, New York. 1955. $10

This book should be a revelation to those who think of cacti and succulents as dead-looking, thorny plants with no beauty. In it is more than sufficient evidence that these plants do have flowers, and that the flowers are quite beautiful.

Something of this sort has long been a need, for one collector after another is always bewailing the fact that he cannot find enough pictures to help identify his plants. Pictured here are two hundred and fourteen plants in black and white, and thirty-two in color, the majority of them shown in flower.

The cultural directions are a bit different from the general conception of what desert plants require, but if under these conditions Mr. Lamb has obtained flowers and good growth, they are obviously satisfactory.

The rather small percentage of the plants which he recommends for house culture will be disappointing to many, but it must be remembered that Mr. Lamb is writing for the English climate, and that with our sunnier climate, a larger number may be grown in the sunny window. It should be particularly noted that keeping the plants dry and cold in the winter is very important for the production of flowers.

Two curious contrasts show in this book. Mr. Lamb simply *knows* that his English reader will have a glasshouse — in this country few indeed are those fortunate enough to have one. It is also interesting to note that many plants which he states are very rare in England, are very common here, while some of his common ones are rare or even unobtainable here.

Finally, this reviewer feels that Mr. Lamb's contribution is deserving of high praise both for its usefulness and for his photography. Every cactus hobbyist should have the *Illustrated Reference on Cacti and Other Succulents.*

E. J. ALEXANDER

HOW TO MAKE CACTI FLOWER. Edgar Lamb. 80 pages, illustrated. Pitman, New York. 1955. $1.95

This "pocket-edition" of Mr. Lamb's larger book is rather a praiseworthy product. It gives the reader all the cultural information needed, and at a cost which will better fit the pocketbook of the average amateur.

The crticisms are not serious. We smile, of course, at the blithe assumption that every one has a greenhouse. Also, in the reference calendar, the growing and watering period should be extended, for our climate, through September, and taper off in October—many of the commonly grown plants make good growth here in September. The number system is, of course, of no value in this country, as American growers neither know of nor use it.

The great value of this booklet lies in the instructions for bringing plants into flower by dry and cold treatment in winter, something most American amateurs need to learn. Overwatering in winter dormancy causes rot or straggly and weak growth, and without a proper dormant period there will be no flowers.

E. J. ALEXANDER

NEW GARDENS. Ernst Baumann. 232 pages, illustrated. Printed in German and English; English translation by James Hull. Distributed by W. S. Heinman, New York. 1955. $12

On a visit to Wittenborn & Company, importers of art books on 57th Street, New York City, I was so impressed by *New Gardens* that I bought a copy of this book by Swiss landscape architect Ernst Baumann. Several evenings of browsing and reading have confirmed my first impression that Mr. Baumann's work is well worth study by American gardeners, amateur and professional.

New Gardens offers detailed and intimate "visits" to eight of Mr. Baumann's home grounds of various sizes and situations. It is illustrated by hundreds of well-organized plans, sketches, and photographs which explain the development of these landscapes. The text, presented in English as well as in Mr. Baumann's native German, concisely explains the designer's aims, also names and describes, in a pleasantly lyrical way, favorite plants and their uses in his gardens.

The theme of *New Gardens,* as contrasted with old-style formal gardens, is set forth in an introduction by Peter Meyer, who says: "The formal garden was a continuation of the house and its architecture, but the new garden draws nature into itself, and the landscape gardener's object is not to display his theories, but rather to create the impression that everything has grown spontaneously. Such composition with individual elements invites us to consider each tree, each single plant, as a personality in its own right and then in relation to the surrounding vegetation."

Plantings consist mainly of handsome deciduous trees and shrubs—such as hornbeam, witch-hazel, alder, willow, beech and horsechestnut—grouped informally or used singly to develop to their full beauty in strategic locations. The reader-visitor finds no sheared hedges, showy flower borders, or heavy foundation plantings. Even where they join the house, all plantings appear casual. Occasional stands of conifers and stone work hold together the deciduous plantings in winter when they are bare of leaf.

The landscapes in *New Gardens* are much more than carefully worked out plantings, however. The designer pays particular attention to the spacial formation of his landscapes. Each site is molded for best use, with consideration for the house

setting and its relationship to the general surroundings. Series of carefully related plans and elevations show how contours are improved and areas blocked into what Mr. Baumann labels the "approach section," "garden room," "meadow" and others.

These landscapes are designed not for show, but to live with and enjoy at all times of year and in many different ways. They are subtle developments by a garden artist who can also describe their beauty in words. Of an old pear tree left standing in a new development, Mr. Baumann says: "It was the children who saved the tree's life. They all loved this old tree whose branches came down so low that you could easily climb high into it. Well, today, the pear tree still stands, and all the occupants of the house—father, mother and children—are thankful for it. It is the biggest tree in the garden. In no other tree you read so clearly the round of the seasons. No other tree can burst so suddenly into blossom or reveal the glories of autumn in such soft colours."

Correlated to this expressed appreciation of nature in all its moods are numerous photographs by Mr. Baumann and three other photographers. Beautifully composed and lighted, they present the gardens in every aspect, and down to details of buds, flowers and fruits. Characteristically, *New Gardens* concludes with an atmospheric photograph of sycamore and birch branches patterned against the sky.

ALICE L. DUSTAN
Garden Designer
Morristown, N. J.

GARDENING MADE EASY. Arthur J. Pratt. 154 pages, illustrated (drawings by Ruby Mitchell); indexed. Hearthside Press, New York. 1955. $2.95

It is near conceit to comment at all after reading the preface by a Dr. Professor at Cornell, and his homework with a wife and three children. This explains the brevity with which sage experience has been packed into one hundred and fifty-odd pages (with allowance for clear plates and woodcuts), covering all that the amateur needs to know from seed sowing to exhibition-staged specimens.

Full benefit from its contents will depend upon the amount of concentration by the hurried, worried, and puzzled new home owner—the very person who needs this book urgently but seldom even takes time to read the short articles on gardening in their papers. The book will replace the scrap book items of too often conflicting statements; even an oldster in gardening practice must read closely to find anything to criticize.

It is not easy to observe terseness with criticism, but an author can expect a few remarks from one with long experience in the practical.

We can emphasize the "No Point Planing" from the modern ranch-type picture window, from which vantage point one can enjoy the garden and vistas, and also that the service area would be better paved for wear and tear. We are not warned enough about a wide overhang to the detriment of starved shrubs, and that a three-foot catwalk is essential protection against window operations and house painting.

The space of four to five feet for lilacs and philadelphus would soon make for a dense hedge condition. For foundation material we prefer the sturdy low evergreen, *Ilex Helleri* and *I. bullata;* and we must also include the versatile *Pieris japonica.*

The "Lawn" is the most concise chapter possible for a much worn topic, and stresses a soil test before lime, water, and crabgrass results.

A baker's dozen forms the cream of annuals for cutting to suit any taste. We would make an even half dozen dry-loving perennials by adding the most satisfactory lythrum 'Morden's Pink,' and among the best perennials for cutting we would substitute catananche and physostegia to blanket flower and phlox. We would choose as spring-blooming flowers *Phlox divaricata,* myosotis, and anchusa to the German iris. Also we believe the regale lily ought to be included in any perennial border.

A few lines should be spared for the "blues and greys or silvers." The latter is always pleasing as "new minted silver" in the soft mounds of *Artemisia Schmidtiana.* The taller 'Silver King' will lighten any dark night path and set off the blues and purples of veronicas, liatris, and platycodon. Santolina and lavender 'Hidicote' are favorites; the latter is sturdy, with dark blue spires covering the plant.

In mentioning mums, phlox, and perennial asters, we are not warned about pinching for sturdy plants—a protection from the ravages by one of the gardener's enemies, wind.

Hydrangea petiolaris and *Schizophragma hydrangeoides* flowering later, are omitted from the vines suggested; *Clematis montana,* too, is a vine for the amateur gardener, generous with its flowers and its lively bronzy foliage.

Very few rose experts will want to amplify the clear and concise instructions on rose growing for best results, but frightening would be the prospect of long, strong roots tucked in the ten-to-twelve-inch holes. The pruning directions are comforting, down-to-earth, only at planting time; thereafter—and wisely—as little pruning as possible, sparing strong healthy canes after dead, pin wood, and flower trusses are cut out any time the pruner is sharp. The lawn advice—that foliage makes roots—surely applies to roses.

The digging operation is not pictured fairly; even a "pro" could not easily turn over the forty to fifty-pound soil block, to bury the top without a trench. It is easier to slice off the turf and tread in shallow space, then the turning technique is optional. Otherwise, keep that trench clear and deep, one foot for digging, two to three feet for real trenching to bury anything but glass and tins.

Particulars for handling seedlings and transplanting are excellent—the emphasis on seed sowing is to "sow thinly and thin boldly."

In serious drought we cannot ignore conservation of moisture by the dust mulch. The "D" or push hoe will create a blanket of dust and kill weeds in contrast to the draw hoe as shown, which scrapes up heavy weeds in ridges often too late.

House plants will indeed be happier with the assistance of "wick watering," as clearly explained and illustrated.

The author, Dr. Pratt, brings pleasure and relaxation to the show committee. He would have us adopt the Danish merit system of giving credit fully as deserved, with less class distinction and hair-splitting decisions—just what the garden clubs I visit should learn about right away.

WILLIAM J. ING
Wanoque, New Jersey

CONTEMPORARY FLOWER ARRANGEMENT. Rae L. Goldson. 127 pages, illustrated, indexed. Hearthside Press, New York. 1955. $3.50

Of all the books which have been written on flower arranging in the last decade, this is one of the most useful from the standpoint of encouraging the regular use of flowers throughout today's homes. A trained, nationally accredited judge and flower show exhibitor, winner of innumerable awards, the author writes only briefly on competitive exhibiting. Her theme is relating flower arrangement to modern living, but her detailed advice on mechanics, color, texture, and design are applicable to flower show work, and her creative suggestions will be stimulating to the most advanced follower of this art.

While stressing boldness and simplicity in silhouette and in the forms used, to conform with modern homes' clean-cut lines and uncluttered interiors, Mrs. Goldson lays emphasis on the basic importance of design and stability.

Profusely illustrated, the book includes many types of floral decorations—from informal arrangements of materials from fields and woods to interpretive compositions, some with the most "modern" sculpture for accessories. Mrs. Goldson has generously shared with us her extensive knowledge of dried arrangements and plaques (her display which won the bronze medal certificate at the 1954 International Flower Show lingers vividly in my mind).

Table settings play a prominent role in our lives and are amply represented herein, both in text and among the one hundred and three photographs. Here the all-important but confusing difference between scale and proportion is explained.

(Continued on page 95)

Remember **BOBBINK & ATKINS** *for the*

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NEWS, NOTES and COMMENTS

Alfred H. Caspary Curatorship. The New York Botanical Garden has received from the Estate of Alfred H. Caspary the sum of $150,000 to endow a curatorship.

The curatorship will be known as the "Alfred H. Caspary Curatorship." The curator will devote himself to investigations with respect to the relationship of plants to the health and well-being of man and to the coordination of the work of The New York Botanical Garden in this area with that of The Rockefeller Institute for Medical Research.

The stated purpose of the curatorship may be revised by the Board of Managers of The New York Botanical Garden at any time after January 1, 1966, if this should be deemed advisable in the light of changing circumstances.

Mr. Caspary, whose generosity has made this endowment possible, was a successful New York stock broker, an internationally known philatelist, and an enthusiastic sportsman. He died in New York City on January 7, 1955, at the age of 77. He left the bulk of his fortune to charity.

Exhibit of Paintings by Erik Hans Krause. Erik Hans Krause, painter and naturalist of Rochester, N. Y., uses gouache in his paintings of botanical and horticultural subjects. A number of these paintings have been on exhibit in the Museum and Administration Building of The New York Botanical Garden from March 7 through May 6.

Mr. Krause has a dynamic approach to the presentation of nature forms and interprets with feeling the plant's structural as well as decorative effects. His studies of the pitcher plant, a double trillium, Jack-in-the-pulpit, dogwood, and gingko in spring are charming.

Several have a captivating note of fantasy and gentle humor seen, for example, in the painting of dandelion seeds borne along on their silken parachutes and in the painting of ripened poppy seeds whirling around the head of the mother plant as they are released to float away in the wide world and reproduce themselves.

Mr. Krause was born and educated in the arts and sciences in Germany—at the Academy of Graphic Arts and the University of Leipzig. A naturalized citizen, he came to this country in 1923, and has illustrated articles on botanical, horticultural and nature subjects in magazines and newspapers and panels for museums and lobbies of public buildings. He is botanical artist and naturalist with the Rochester, New York, park system and lectures before garden clubs, civic organizations, and youth groups.

Arbor Day at the Garden. The New York Botanical Garden has arranged special ceremonies for Arbor Day, April 27. At the time of writing (March 10) it is expected that the Honorable Thomas C. Desmond, Senior State Senator of New York and a member of the Board of Managers of The New York Botanical Garden, will be the principal speaker. Dr. P. P. Pirone, Plant Pathologist of the Garden, and a member of the Arbor Day Association, sponsored by the National Shade Tree Commission, will also speak. School children, Boy Scouts, and Girl Scouts will assist in planting the trees.

April 27 has been designated as Garden Club Day to enable members of garden clubs affiliated with The New York Botanical Garden to attend the Arbor Day exercises at two o'clock. The garden club members are scheduled to meet at the Lorillard Snuff Mill at eleven o'clock that morning. A. C. Pfander, Administrator, is to talk to the gathering briefly on "What is going on at the Garden," followed by the always popular question and answer period.

Children's Plant Workshop and Flower Show. On May 12, when this number of THE GARDEN JOURNAL will be on its way to our members, an interesting event will be taking place at The New York Botanical Garden: A Mother's Day Flower Show. This is the fourth and final session of the Children's Plant Workshop and Flower Show Project, sponsored by The New York Botanical Garden and the Ninth District of the Federated Garden Clubs of New York State, Inc. Mrs. Sam Lasker, Chairman of the Ninth District Juniors, and T. H. Everett, Curator of Education and Horticulturist of the Garden, are the Committee in Charge.

Children within the 8-12 year age group from New York City and Westchester County on two Saturdays in April, the 14th and the 28th, and a Saturday in May, the 5th, have been receiving instruction in gardening and flower arranging by experienced members of the Ninth District. At the first session the children learned about propagation by seeds, cuttings, division, air-layering and sponge gardens with Mrs. A. K. Bowes, the instructor. In the second session, Mrs. George M. Houser showed them how to make terrariums and dish gardens, how to make animals from vegetables and fruits, how to identify leaves, and at the third session Mrs. David Kirschenbaum demonstrated flower arranging.

The schedule of A Mother's Day Flower Show provides for entries by Juniors, 12-18 year age group, from New York City and Westchester County as well as the younger participants in the Children's Plant Workshop. The six classes in Section 1, Flower Arrangements, includes: Corsage for Mother, fresh and/or dried material; Springtime Greeting, an arrangement or composition of spring flowers, branches and foliage permitted; A Bedtime Story, an arrangement or composition depicting a favorite story; Little Dreams, a small arrangement not to exceed six inches overall for beginners, a miniature arrangement not to exceed three inches overall for those who have exhibited before; a T.V. Snack for Mother, flower arrangement with place settings for two on card table; Famous Mothers in History, composition to be staged in a shadow box, invitation only. Horticultural classes in Section 2 call for a pan or dish garden, a terrarium, animal figure made from fruit and/or vegetables; sprouted seeds, tubers, representing germination; plant grown from cutting representing propagation. Mrs. Ralph H. Langley served as show chairman.

The Millbrook Garden Club will show five houses with flower arrangements and an exhibit of needle work in Sharon, Connecticut, on Wednesday afternoon, June 20, two to six o'clock. For further information, write Mrs. E. H. Bogardus, Sharon, Conn.

The fruit of one of the exotic magnolias is as fascinating as are the enchanting flowers of this genus — from the exhibit of paintings by Erik Hans Krause, painter and naturalist of Rochester, N. Y., in the Museum and Administration Building of The New York Botanical Garden, March 7 to May 6, 1956.

Rose Selections for 1957. 'Golden Showers,' a canary-yellow climbing rose, and 'White Bouquet,' a floribunda, after being tested for two years in All-America trial gardens, have won the All-America Rose Selections Award for 1957.

'Golden Showers' is the first pillar and climbing rose to win the All-America award in sixteen years. The variety is extremely vigorous and the new canes continue to produce flowers all summer, with a profusion of the four- to five-inch blooms in early spring and again in the fall. As the bronze-colored stems are long and rather free of thorns, this makes 'Golden Showers' a good cutting rose.

'White Bouquet' is the first white floribunda to win the All-America Rose Award. The gardenia-like blooms have a spicy fragrance and show up well against the lustrous dark green leaves.

An Old Rose Found in Bermuda. Richard Thomson of Wynnewood, Pa., Chairman of the Old Rose Committee of the American Rose Society, found *Rosa chinensis semperflorens* while strolling three years ago in the gardens at Belfield-in-Somerset, Bermuda. This is a two hundred and twenty-five year old restaurant and gift shop.

Mr. Thomson believes that Bermuda is one of the few places, if not the only place, in the world where this species rose still grows. At first he couldn't believe his eyes. He made a quick preliminary check, then followed through with three years of careful investigation.

The original source of the China tea rose is southeastern China. *R. chinensis semperflorens* was brought to England around 1800 by the East India Company. It is comparatively small in size as roses go, measuring about three inches in diameter. The petals opening pale pink turn to a deep crimson before dropping off. The open bloom lasts only two or three days.

According to Mr. Thomson, the real importance of finding this rose is its value to those concerned in tracing original roses from which the modern-day garden roses have been developed.

BOOK REVIEWS (from page 93)

But most interesting to me is the challenge she gives us to become more than gifted dreamers as arrangers—rather to be "something of a carpenter, a little bit of a chemist, kind of an engineer, a scavenger, always on the hunt not only for plant materials, but for pieces of rare fabric, unusual containers or objects that can be made into containers, and sculpture and ornaments for accessories." Helpful instruction is given on making containers of wood or metals with various finishes or effects created at home. Her points are referred to the illustrations by plate numbers, making this a real hand-book for serious study. A fine index is also included.

One practical feature of the book is the showing of a single container used in different ways, according to the season or flowers, for we all find we have favorites which we return time after time. Variety is given by changing the height by a number of means, or placement, or shape of the arrangement.

This is a book to enjoy reading, and a book to keep for reference as well.

DOROTHY W. LOGIE
Upper Montclair, N. J.

BONSAI MINIATURE TREES. Claude Chidamian. 96 pages, illustrated, indexed. D. Van Nostrand, Princeton, N. J. 1955. $3.95

While I have been reading the contents and looking at the photographs of Claude Chidamian's book, I have not been unmindful of the fact that he is critical of the very source material he has borrowed to use in his book and, in one instance, without giving credit.

I quote from the author's preface: "Even the recent appearance of several small books on bonsai has proved a disappointment. Norio Kobayashi's *Bonsai-Miniature Potted Trees* (Tokyo, Japan Travel Bureau, 1950), Alfred Koehn's *Notes on Bonsai* (Tokyo Foreign Affairs Association of Japan, 1952), and the Brooklyn Botanic Garden's *Handbook on Dwarfed Potted Trees* (Brooklyn, New York, 1953), although well illustrated and written by experts, are all too brief and set in English that is more often quaint than clear." The first and the latter (for which the reviewer is responsible as guest editor) are easily obtainable in New York, and the cautious reader will find that Chidamian's book is scarcely beyond these two books in the field of appreciation and technique of bonsai. It is evident that many matters are learned directly from these two books and some sketched by Shirlea Hatcher, too.

The reviewer is unhappy in knowing that the author, who is entirely unknown to him, used all the photographs (except the bonsai portrait on the cover) in the bonsai handbook he, the reviewer, edited—without any courtesy line to the Brooklyn Botanic Garden.

If the author has experienced "twenty years of studying and growing bonsai," as stated in the preface, why could he not have written on some important, interesting and detailed fields in art, science, and technique of bonsai which these small books omitted owing to the limit of space?

KAN YASHIRODA
The Acclimatization Garden
Tonsho-Kyoku
Kagawa-Ken, Japan.

Note—The Brooklyn Botanic Garden has been informed by the publisher that credit for the photographs will be given in the next printing.

PRACTICAL GARDENING. Olive Mason Gunnison. 384 pages, drawings by Caroline K. Allen; foreword by T. H. Everett; indexed. American Garden Guild & Doubleday, Garden City, N. Y. 1955. $4.50

Here is a book that the beginner will be able to understand and the average gardener will find a help in solving some problems without the necessity of trial and error.

The first chapter, "Planning the Garden is Important" covers, I think, the most important steps in gardening. If studied and carried out according to a plan as recommended here, the gardener will not have so many things go wrong and sometimes feel discouraged about his gardening efforts.

Illustrations are adequate and avoid the need for lengthy explanations, which are usually not understood by the beginner.

Work in the garden is covered from the planning until the caring for the garden in winter—a phase which is usually overlooked.

If one wishes to go into further details about gardening, the list of garden books and magazines is helpful; also the list of State Agriculture Experiment Stations which is given in the Appendix. The Appendix further gives a list of annuals according to color, blooming dates, and planting distances; perennial plants arranged according to color, heights, and blooming dates; plants, shrubs and vines suitable for shade, seashore, and city planting, small trees, shrubs, and vines with colorful berries or seeds; plants with poisonous properties. Window-box and house plants are listed.

In all, a very informative book for those interested enough in gardening to do some reading and planning.

STUART LONGMUIR
Supt. of Grounds
Shelton College

GUIDE TO GARDENING WITH YOUNG PEOPLE. Richard R. Kinney. 210 pages, illustrated, indexed. Prentice-Hall, New York. 1955. $3.25

In *Guide to Gardening With Young People* there are chapters such as: "A Gardening Plot," "Planting Time," "Excluding Intruders," "Fun With Flora," "Perennial Varieties," and "Management of Resources," which along with others in the book add up to a balanced program of instruction in horticulture, nature study and conservation, flower arranging and flower show practice.

Written simply, and containing drawings and diagrams by the author, *Guide to Gardening With Young People* can be used by old and young alike.

It gives the young gardener and his instructor careful, well-illustrated descriptions of the fundamental gardening techniques in growing vegetables and flowers. There is practical information on planning a garden as well as on spading, hoeing, raking, making a compost pile, fertilizing, cultivating, spraying and harvesting.

Each chapter contains a section for use as a guide for the nature group advisers, and there is a generous amount of appropriate information given in lists and tables.

ROMAINE F. BUTTON
Office of Elementary Science and
School Gardens, Board of Education
New York City

ORIGIN AND DISTRIBUTION OF THE BRITISH FLORA. J. R. Matthews. 173 pages, indexed. Longmans, Green & Co., New York. 1955. (Printed in Great Britain.) $2.40

Professor Matthews' learned and convincing treatise may be briefly summarized as follows:

The British flora is an attenuation of the flora of continental Europe, with very few

Youths and adults alike are taking advantage of the opportunity to learn how to care for plants in the home and in the garden through the Hobby Club at The New York Botanical Garden. Every Saturday between the hours of 10 a.m. to 4 p.m., Garden personnel is available to instruct amateur gardeners and assist them with their problems. Hobby Club headquarters are in House 5 of the Conservatory Range.
Here Louis P. Politi, Head Gardener, is showing some young would be gardeners and their mothers the elementary steps in propagating and potting.

• Have you a friend who would enjoy the privileges of membership in The New York Botanical Garden?

• Why not tell him about them—or if you prefer, please send his name to us and we shall be glad to mail him literature describing the privileges of such membership.

• A member of The New York Botanical Garden also has the satisfaction of contributing to the advancement of the botanical and horticultural sciences.

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THE NEW YORK BOTANICAL GARDEN
Bronx Park, New York 58, N. Y.

endemic species, and the Irish flora is largely a further attenuation of the British flora. Although some species of vascular plants survived the Pleistocene glaciations in Britain, both on nunataks and on the ice-free southern margin of the present island, some of these have since perished, and the remainder are largely confined to the most inhospitable habitats. The majority of the present native flora, consisting of about 1,500 species, migrated in from Europe after the most recent glaciation and before the final severance, some eight or nine thousand years ago, of Britain from the continental mainland. The English channel has subsequently impeded the migration of species which might otherwise have become established in Britain during the several thousand years of ameliorated climate which followed the development of the channel.

AN INTRODUCTION TO PLANT TAXONOMY. George H. M. Lawrence. 179 pages, illustrations by Marion Ruff Sheehan; glossary and index. Macmillan, New York. 1955. $3.25

One is tempted to compare this text with Asa Gray's classic *Lessons in Botany*, for it "is written for the adult amateur botanist and the student of a local flora course at the college level." It is an abstract of the author's earlier text on vascular plant taxonomy, but sufficient information is presented to make it a very useful book to its intended audience.

An introductory chapter deals with the nature and importance of taxonomy, and in the next a review of the history of the subject is presented. The chapter on evolution and units of classification is not especially helpful, but the following one (a review of organography and the terminology used in describing vascular plants) is important. As might be expected in matters of terminology, there are several terms whose definitions may not fit the reader's concept of them. The illustrations of these terms and structures will be of considerable value to the amateur and the less-experienced student.

The next four chapters deal with the techniques employed in collecting and identifying plants, the more important points necessary for an understanding of the Rules of Nomenclature and their application, the relationships of plants and the new biosystematics, and taxonomy in North America "as reflected by the lives and accomplishments of about thirty of its leading scholars."

The last chapter takes up the more important families (opinions will differ on this subject) with pertinent statements as to easily observed characters which may be used to distinguish them. Most of these are characters which affect the entire aspect of the plant and are thus very useful.

It is the opinion of the reviewer that this volume is better-than-average as a reference text when used in conjunction with much fuller explanations of many of the included topics, but not particularly well-suited for use alone by the untrained and untutored.

RICHARD S. COWAN

Open House, Farm and Garden Tour by Lenox Garden Club for benefit of its Educational Fund, June 19, 1956, 10 a.m.-5:30 p.m., rain or shine. Tour and tea (served at the Berkshire Garden Center, 4-5 p.m.) $3.50; basket luncheon (served at High Lawn Farm, 12:30-2:30 p.m.) $1.50. For full information and tickets, write to Mrs. Alexander Euston, Publicity Chairman, Lenox Garden Club Tour, 284 Pomeroy Ave., Pittsfield, Mass.

Errata. Line 24, second column, page 59 of the March-April issue of THE GARDEN JOURNAL, should read: December 1894.

LET THERE BE HERBS

Plan to plant some pot-herbs this year. They are the perennial greens which can be cut over and over through the summer. When space is limited for a vegetable patch, pot-herbs and seasonings give more for the room they take up. The spinach-type greens which produce year after year can be frozen as well as eaten fresh cooked. They need two waters to remove the dark green taste, but when spiced with a bit of onion or garlic or vinegar and served with hard-boiled egg, they make a most nutritious and palatable vegetable. Any one of the varieties to be described here can be used alone or in combination with regular spinach or with each other.

Comfrey, *Symphytum officinale*, is a member of the Borage and Forget-me-not family. It forms a broad clump of large, hairy leaves on two- to three-foot tall fleshy, rather bristly stems which are hollow. The blossoms are either lavender or yellow in drooping, one-side clusters, appearing in June and continuing throughout the summer. Plants to be used for greens should be cut over often to discourage flowering. As with most herbs, when the blossoms develop, the leafage is sparse.

Knitbone is another name for comfrey in England. There it has a reputation for healing wounds and causing bones to knit when fractured. The active principle is a substance called allantoin, which has been proven of value in treating stomach ulcers. Squash also contains this alkaloid, and its action on the skin of a person handling it in preparation for cooking is the same as comfrey's. It makes hands feel strangely dry and prickly. When comfrey leaves are boiled in two waters, all the hairiness disappears, and a generous bulk of verdant leaves is left to be chopped like cooked spinach.

So productive are different types of *Symphytum* that they are being used as forage crops in England and Russia. As hay, the nutritious quality of the leaves is very great. The crop must be started from root divisions, so it is not widely accepted as yet, and methods for drying it are still under study. Most of what is field grown is used by stables of racing horses, where quality is more important than cost in choosing feed.

Comfrey thrives in wet places and yet will grow under almost any conditions in the garden. The roots become very large after a year or two, and divisions are made by slicing them up with a spade. Seeds are scarce as the flowers ripen in succession, dropping their fruits as soon as they mature. Most nurseries specializing in herb plants such as Village Hill Nursery, Williamsburg, Massachusetts, and Plantation Gardens, Rustburg, Virginia, list comfrey. The latter offers seeds, but they are expensive.

A good companion plant for the bland-flavored comfrey is the piquant garden sorrel, *Rumex acetosa*. It is also a perennial, though English writers say it should be sown anew every year for the most delicate flavor. If it is to be a permanent part of the garden, sorrel should be planted in a separate bed with comfrey, chervil, and other pot-herbs or in a perennial border in the vegetable garden. Sun increases the acidity in the leaves, so the plants should be placed in partial shade or given a northern exposure.

As soon as the flower buds show themselves in June, they should be cut off. If allowed to flower, the plants are not fit for cutting, and the seeds will self-sow all over the garden. Some of the brownish blossoms will occasionally escape the vigilant gardener; when they do mature, the curious flat, brown seeds in typical dock-family arrangement make interesting material for dried bouquets.

Sorrel is usually mixed with other greens as a tart counterpoint for their typical spinach-like taste. It is especially good with comfrey. The tender young leaves may be cooked whole with that pot-herb. If foliage from mature sorrel plants must be used, it is necessary to strip off the mid-rib before cooking. When heat strikes the leaves, they disintegrate into a slippery puree making them fine for sorrel soup and flavoring other greens but difficult to handle by themselves.

Chervil is the third partner of this good corporation to grow in some less desirable shady part of the garden and to cook together in two waters for vitamin-rich greens. It will self-sow year after year if one or two plants are left to go to seed. The leaves will remain green longer, for picking and using as a similar but more lacey counterpart of parsley, if they are not in full sun. All three of these greens can be frozen after blanching and seem to improve in flavor in this process. The proportion should be two-thirds comfrey, one third sorrel and a handful of chervil.

GERTRUDE B. FOSTER

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From Asia and Turkey come these rare, many flowered tulip species, rugged ancestors of our garden tulips of today. They have charming, dainty blooms that are frequently accented with brilliant color markings. Many varieties produce 9 to 11 flowers on a single stem. Once planted, they are permanent, coming up year after year without further care.

WAYSIDE GARDENS "1956" TULIP MIXTURES"

Each year, we arrange with Grullemans of Holland to set aside several thousand choice, top size bulbs for this outstanding collection. Popular mixture includes the finest, superior bulbs selected from hundreds of varieties of Cottage, Darwin, Ideal Darwin, Giant Breeder, Multi-flowered, Lily-flowered and Chameleon Tulips in a harmonious blending of colors.

50 TOP SIZE BULBS..$ 6.50 **250 TOP SIZE BULBS..$ 28.00**
100 TOP SIZE BULBS..$12.00 **1000 TOP SIZE BULBS..$100.00**

FRAGRANT PINK DAFFODILS

The delicate, fragile beauty and prolific blooming of these glorious, new daffodils will amaze you. Very hardy and easy-to-grow, they double in number each year. Exquisite flowers have radiant, white petals with gently ruffled cups of shell pink, apricot, tangerine-orange and rose.

One each of eight (8) varieties.....$4.00

WEATHER-PROOF DAFFODILS

You have never seen such Daffodils. Virtually indestructible, the giant flowers bloom gaily unharmed by snow, wind, pelting rain or burning sun. All multiply rapidly.

	Dozen
Brookville. Exquisite, heavy, white petals, large pale yellow cup	$3.75
Confuoco. Deep yellow perianth with wide, crested, vivid scarlet crown	5.75
Duke of Windsor. Huge white petaled beauty, flaring yellow crown	4.85
Green Emerald. Flaring lemon-yellow cup, gleaming white petals	3.50
Harvest Moon. Creamy white petals, golden yellow cup edged in reddish orange	5.75
Manco. Frilled cup of deep gold and orange. Large, pale yellow perianth	4.10
Times Square. Flat ruffled cup of fiery orange-red, cream-yellow perianth	5.00
Wodan. Graceful, frilled, yellow crown, canary-yellow perianth	5.00

Collection: 1 each of the above 8 varieties (8).....$4.00

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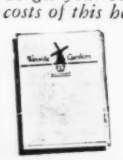

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